

AD A114941

DTIC FILE COPY

2

# DEPARTMENT OF THE NAVY JUSTIFICATION OF ESTIMATES FOR FISCAL YEAR 1983 (U)



SUBMITTED TO CONGRESS FEBRUARY 1982

## PROCUREMENT BOOK 1 OF 2

AIRCRAFT PROCUREMENT, NAVY  
WEAPONS PROCUREMENT, NAVY

DTIC  
ELECTE  
MAY 28 1982  
A

This document has been approved  
for public release and sale; its  
distribution is unlimited.

82 05 26 001

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. <b>AD-A224942</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DEPARTMENT OF THE NAVY JUSTIFICATION OF ESTIMATES FOR FISCAL YEAR 1983 PROCUREMENT BOOK 1 <i>Book 1 of 2</i>		5. TYPE OF REPORT & PERIOD COVERED <b>FY83 BUDGET MATERIAL</b>
7. AUTHOR(s) DEPARTMENT OF THE NAVY OFFICE OF THE COMPTROLLER		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS NAVCOMPT/BUDGET EVALUATION GROUP BUDGET COORDINATION BRANCH PENTAGON WASHINGTON, D.C. 20350		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS DEPARTMENT OF THE NAVY/OFFICE OF THE COMPTROLLER BUDGET EVALUATION GROUP/BUDGET COORDINATION BRANCH PENTAGON 14C640 WASHINGTON, DC 20350		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE <b>FEBRUARY 1982</b>
		13. NUMBER OF PAGES <b>115</b>
		15. SECURITY CLASS. (of this report) <b>UNCLASSIFIED</b>
16. DISTRIBUTION STATEMENT (of this Report) <b>UNCLASSIFIED - APPROVED FOR PUBLIC RELEASE</b>		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES THIS BOOK CONTAINS SUMMARY AIRCRAFT PROCUREMENT, NAVY AND WEAPONS PROCUREMENT, NAVY JUSTIFICATION MATERIAL IN SUPPORT OF THE FY 83 PRESIDENT'S BUDGET SUBMISSION. THIS IS ONE OF TWO VOLUMES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) AIRCRAFT PROCUREMENT, NAVY (APN) WEAPONS PROCUREMENT, NAVY (WPN)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <i>REPORT</i> THIS BOOK CONTAINS APPROPRIATION LANGUAGE, PROGRAM AND FINANCIAL EXHIBITS, NARRATIVE BUDGET ACTIVITY AND OTHER SUMMARY MATERIAL FOR AIRCRAFT PROCUREMENT, NAVY AND WEAPONS PROCUREMENT, NAVY APPROPRIATIONS.		

Department of the Navy  
Aircraft Procurement, Navy  
Justification of Estimates for Fiscal Year 1983 and Fiscal Year 1984

TABLE OF CONTENTS

	<u>Page No.</u>
Budget Appendix Extract . . . . .	1-1
Introductory Statement . . . . .	1-10
Summary of Requirements . . . . .	1-12
 Budget Activity Justifications:	
Activity 1 - Combat Aircraft . . . . .	1-14
Activity 2 - Airlift Aircraft . . . . .	1-25
Activity 3 - Trainer Aircraft . . . . .	1-28
Activity 4 - Other Aircraft . . . . .	1-30
Activity 5 - Modification of Aircraft . . . . .	1-32
Activity 6 - Aircraft Spares and Repair Parts . . . . .	1-51
Activity 7 - Aircraft Support Equipment and Facilities . . . . .	1-56
 Comparison of Program Requirements and Financing . . . . .	 1-67
Analysis of Unobligated Balances . . . . .	1-80
Status of Aircraft Modification Programs . . . . .	1-84
Aircraft Modification Back-up Data . . . . .	1-90
Flight Simulator Procurement Exhibit. . . . .	1-31
Multiyear Procurement Exhibits. . . . .	1-32

1-1



Accession For	
DTIC GRI	<input checked="" type="checkbox"/>
DTIC S&P	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

Aircraft Procurement, Navy

For construction, procurement, production, modification, and modernization of aircraft, equipment including ordnance, spare parts, and accessories therefor; specialized equipment, expansion of public plants, including the land necessary therefor; and such lands and interest therein, may be acquired, and construction prosecuted thereon prior to approval of title as required by section 355, Revised Statutes, as amended; and procurement and installation of equipment, appliances, and machine tools in public or private plants; reserve plant and Government and contractor-owned equipment layaway; \$9,115,800,000 \$11,582,300,000 to remain available for obligation until September 30, 1984, September 30, 1985 (10 U.S.C. 5012, 5031, 7201, 7341; 31 U.S.C. 718; Department of Defense Appropriation Act, 1982; additional authorizing legislation to be proposed for the fiscal year 1983).



Financing

The FY 1983 budget plan of \$11,582,300,000 for the Aircraft Procurement, Navy appropriation is to be financed by new obligational authority. The FY 1984 authorization plan of \$12,899,700,000 will also be financed by new obligation authority.

Navy

## Aircraft Procurement, Navy

26 JAN 82

## Program and Financing (in thousands of dollars)

Identification code	17-1506-0-1-051	Budget plan (amounts for procurement actions programed)			Obligations			
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.	
<b>Program by activities:</b>								
<b>Direct:</b>								
1.	Combat aircraft	4,075,859	6,094,100	7,331,900	3,551,654	5,885,462	6,965,223	
2.	Airlift aircraft	36,854	37,200	284,000	36,489	31,677	238,596	
3.	Trainer aircraft	56,321	73,700	57,600	10,514	120,180	66,847	
4.	Other aircraft	44,680	138,600	36,800	39,079	157,721	51,163	
5.	Modification of aircraft	693,338	926,700	1,311,100	812,665	817,033	1,192,740	
6.	Aircraft spares and repair parts	1,095,201	1,541,200	2,080,900	1,182,408	1,411,216	2,007,891	
7.	Aircraft support equipment and facilities	251,354	328,500	480,000	256,370	314,995	438,440	
	<b>Total direct</b>	<b>6,254,307</b>	<b>9,140,000</b>	<b>11,582,300</b>	<b>5,889,179</b>	<b>9,713,284</b>	<b>10,960,900</b>	
	<b>Reimbursable program</b>	<b>31,503</b>	<b>30,000</b>	<b>30,000</b>	<b>17,600</b>	<b>56,874</b>	<b>29,983</b>	
10 0001	<b>Total</b>	<b>6,285,810</b>	<b>9,170,000</b>	<b>11,612,300</b>	<b>5,906,779</b>	<b>9,770,158</b>	<b>10,990,883</b>	
<b>Financing:</b>								
<b>Offsetting collections from:</b>								
11 0001	Federal funds	-23,110	-20,700	-20,700	-22,706	-20,700	-20,700	
13 0001	Trust funds	-8,001	-7,300	-7,300	-8,596	-7,300	-7,300	
14 0001	Non-federal sources	-392	-2,000	-2,000	-394	-2,000	-2,000	
17 0001	Recoveries of prior year obligations(-)				-11,132			
	<b>Unobligated balance available, start of year</b>				-1,380,810	-1,651,664	-2,046,506	
21.4001	For completion of prior year budget plans				-13,700			
21.4002	Available to finance new budget plans	-13,700						
21.4003	Reprogramming from or to prior year budget plan	-119,604						
23.4001	Unobligated balance transferred to other accounts	13,700			13,700			
24.4001	Unobligated balance available, end of year				1,651,664	2,046,506	2,667,223	
25.0001	Unobligated balance lapsing	119,604			119,604			
39.0001	<b>Budget authority</b>	<b>6,254,307</b>	<b>9,140,000</b>	<b>11,582,300</b>	<b>6,254,307</b>	<b>9,140,000</b>	<b>11,582,300</b>	
<b>Budget authority</b>								
40.0001	Appropriation	6,254,307	9,115,800	11,582,300	6,254,307	9,115,800	11,582,300	
42 0001	Transferred from other accounts		24,200			24,200		
43.0001	<b>Appropriation (adjusted)</b>	<b>6,254,307</b>	<b>9,140,000</b>	<b>11,582,300</b>	<b>6,254,307</b>	<b>9,140,000</b>	<b>11,582,300</b>	
<b>Relation of obligations to outlays</b>								
71 0001	Obligations incurred, net				5,874,981	8,745,158	10,960,883	
72.4001	Obligated balance, start of year				5,116,866	6,621,024	9,708,682	
74.4001	Obligated balance, end of year				-6,621,024	-9,708,682	-12,849,965	
77.0001	Adjustments in expired accounts				36,948			
78.0001	Adjustments in unexpired accounts				-1,132			
90.0001	<b>Outlays</b>				<b>4,396,638</b>	<b>5,657,500</b>	<b>7,819,600</b>	

Navy

Aircraft Procurement, Navy

26 JAN 62

## Object Classification (in thousands of dollars)

Identification code	17-1576-0-1 051	1981 actual	1982 est.	1983 est.
Direct obligations				
Other services				
125 002	Purchases from industrial funds	30,591	21,795	27,402
126 001	Supplies and materials	1,182,409	1,307,742	1,644,135
131 001	Equipment	4,676,179	7,388,747	9,289,363
199.001	Total direct obligations	5,889,179	8,718,284	10,960,900
Reimbursable obligations				
226.001	Supplies and materials	17,600	20,000	9,983
231 001	Equipment		36,874	20,000
299 001	Total reimbursable obligations	17,600	56,874	29,983
999 901	Total obligations	5,906,779	8,775,158	10,990,883

Navy

## Aircraft Procurement, Navy

26 JAN 82

## Program and Financing (in thousands of dollars)

1979 Fiscal year program

Identification code 17-1506-0-1-051

Budget plan (amounts for  
procurement actions programmed)

## Obligations

	1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
<b>Program by activities:</b>						
<b>Direct:</b>						
1. Combat aircraft				77,882		
2. Airlift aircraft				1,567		
3. Trainer aircraft				5		
4. Other aircraft				889		
5. Modification of aircraft				115,513		
6. Aircraft spares and repair parts				10,415		
7. Aircraft support equipment and facilities				17,114		
Total direct				223,385		
Reimbursable program				1,081		
10 0001 Total				224,466		
<b>Financing:</b>						
Offsetting collections from:						
11.0001 Adjustment to prior year federal fund order				-15		
13.0001 Adjustment to prior year trust fund orders				-50		
14.0001 Adjustment to non-federal sources				1		
17.0001 Recoveries of prior year obligations(-)				-11,106		
Unobligated balance available, start of year:						
21.4001 For completion of prior year budget plans				-332,900		
21.4002 Reprograming from or to prior year budget plan	-119,604					
25.0001 Unobligated balance lapsing	119,604			119,604		
40.0001 Budget authority						

Navy

## Aircraft Procurement, Navy

26 JAN 82

## Program and Financing (in thousands of dollars)

1980 Fiscal year program

Identification code	17-1506-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations		
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
Program by activities:							
Direct							
1	Combat aircraft				462,136	100,622	
2	Airlift aircraft				316	289	
3	Trainer aircraft				254	346	
4	Other aircraft				18,061	24,289	
5	Modification of aircraft				136,448	58,914	
6	Aircraft spares and repair parts				147,903	26,536	
7	Aircraft support equipment and facilities				42,526	10,363	
Total direct					807,644	221,359	
Reimbursable program					9,980	9,184	
10 0001	Total				817,624	230,543	
Financing:							
Offsetting collections from:							
11 0001	Adjustment to prior year federal fund orders				417		
13 0001	Adjustment to prior year trust fund orders				-645		
14 0001	Adjustment to non-federal sources				-3		
17.0001	Recoveries of prior year obligations(-)				-26		
Unobligated balance available, start of year.							
21.4001	For completion of prior year budget plans				-1,047,910	-230,543	
21.4002	Available to finance new budget plans	-13,700			-13,700		
23.4001	Unobligated balance transferred to other accounts	13,700			13,700		
24.4001	Unobligated balance available, end of year				230,543		
40 0001	Budget authority						

Navy

## Aircraft Procurement, Navy

26 JAN 82

Program and Financing (in thousands of dollars)		1981 Fiscal year program					
Identification code	17-1506-3-1-051	Budget plan (amounts for procurement actions programmed)			Obligations		
		1981 actual	1982 est.	1983 est	1981 actual	1982 est	1983 est
Program by activities:							
Direct:							
1.	Combat aircraft	4,075,859			3,011,636	803,231	260,992
2.	Airlift aircraft	36,854			24,606	884	1,364
3.	Trainer aircraft	56,321			10,255	39,400	6,666
4.	Other aircraft	44,680			20,129	19,780	4,771
5.	Modification of aircraft	693,338			560,704	63,094	69,540
6.	Aircraft spares and repair parts	1,095,901			1,024,090	43,836	27,975
7.	Aircraft support equipment and facilities	251,354			196,730	31,900	22,724
	Total direct	6,254,307			4,858,150	1,002,125	394,032
	Reimbursable program	31,503			6,539	23,090	1,874
10.0001	Total	6,285,810			4,864,689	1,025,215	395,906
Financing:							
Offsetting collections from:							
11.0001	Federal funds	-23,110			-23,110		
13.0001	Trust funds	-8,001			-8,001		
14.0001	Non-federal sources	-392			-392		
21.4001	Unobligated balance available, start of year					-1,421,121	-395,906
24.4001	Unobligated balance available, end of year				1,421,121	395,906	
40.0001	Budget authority	6,254,307			6,254,307		

Navy

## Aircraft Procurement, Navy

26 JAN 82

Program and Financing (in thousands of dollars)					1982 Fiscal year program		
Identification code	17-1506-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations		
		1981 actual	1982 est	1983 est.	1981 actual	1982 est	1983 est.
Program by activities							
Direct:							
1	Combat aircraft	.	6,094,100	.	.	4,981,609	698,374
2	Airlift aircraft	..	37,200	.	..	30,504	4,352
3	Trainer aircraft	..	73,700	.	..	60,434	12,949
4	Other aircraft	..	138,600	.	..	113,652	16,216
5	Modification of aircraft	..	926,700	.	..	695,025	136,904
6	Aircraft spares and repair parts	..	1,541,200	.	..	1,340,844	169,532
7	Aircraft support equipment and facilities	..	328,500	.	..	272,732	31,054
Total direct		..	9,140,000	.	..	7,494,800	1,069,381
Reimbursable program		..	30,000	.	..	24,600	3,509
10 0001	Total	..	9,170,000	.	..	7,519,400	1,072,890
Financing:							
Offsetting collections from:							
11.0001	Federal funds	..	-20,700	.	..	-20,700	.
13.0001	Trust funds	..	-7,300	.	..	-7,300	.
14.0001	Non-federal sources	..	-2,000	.	..	-2,000	.
21 4001	Unobligated balance available, start of year	..	.	.	..	.	-1,650,600
24 4001	Unobligated balance available, end of year	..	.	.	..	1,650,600	577,710
39 0001	Budget authority	..	9,140,000	.	..	9,140,000	.
Budget authority							
40 0001	Appropriation	..	9,115,800	.	..	9,115,800	.
42.0001	Transferred from other accounts	..	24,200	.	..	24,200	.
43 0001	Appropriation (adjusted)	..	9,140,000	.	..	9,140,000	.

Navy

## Aircraft Procurement, Navy

26 JAN 82

## Program and Financing (in thousands of dollars)

1983 Fiscal year program

Identification code	17-1506-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations			
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.	
Program by activities:								
Direct:								
1.	Combat aircraft			7,331,900			6,005,857	
2.	Airlift aircraft			284,000			232,880	
3.	Trainer aircraft			57,600			47,232	
4.	Other aircraft			36,800			30,176	
5.	Modification of aircraft			1,311,100			986,296	
6.	Aircraft spares and repair parts			2,080,900			1,810,384	
7.	Aircraft support equipment and facilities			480,000			384,662	
	Total direct			11,582,300			9,497,487	
	Reimbursable program			30,000			24,600	
10.0001	Total			11,612,300			9,522,087	
Financing:								
Offsetting collections from:								
11.0001	Federal funds			-20,700			-20,700	
13.0001	Trust funds			-7,300			-7,300	
14.0001	Non-federal sources			-2,000			-2,000	
24.4001	Unobligated balance available, end of year						2,090,213	
40.0001	Budget authority			11,582,300			11,582,300	



INTRODUCTORY STATEMENT  
(In Thousands)

	1982 ESTIMATE	1983 ESTIMATE	1984 AUTHORIZATION
Appropriation (Adjusted)	\$9,140,000	\$11,582,300	\$12,899,700
Total Direct Obligation	\$8,718,284	\$10,960,900	-
Total Direct Budget Plan	\$9,140,000	\$11,582,300	\$12,899,700

The "Aircraft Procurement, Navy" (APN) appropriation finances the procurement of aircraft and related supporting equipment and programs for Navy and Marine aviation forces, including modification kits and other equipments for in-service aircraft; aircraft repairable spares and parts; and ground support and training/simulator equipment and industrial facilities required for the efficient production and maintenance of aircraft. Also included in the FY 1983 APN budget are funds to finance procurement of material and effort which, even though required for planned FY 1984 programs, have to be ordered in FY 1983 due to lead time considerations.

The FY 1984 authorization estimates for the "Aircraft Procurement, Navy" appropriation, covering the fiscal year period 1 October 1983 to 30 September 1984, have also been included for purpose of authorization pursuant to the Congressional Budget and Impoundment Control Act of 1974 (Public Law 93-344).

FISCAL YEAR 1983 HIGHLIGHTS

The FY 1983 budget program for the Aircraft Procurement, Navy appropriation is \$11.6 billion. Salient features of the FY 1983 request are:

(a) Procurement of 288 aircraft requiring \$6,783.2 million. A-6E, EA-6B, AV-8B, F-14A, F-18, CH-53E, SH-60B, P-3C, E-2C, SH-2F, T-34C, and TH-57 aircraft continue to be procured in FY 1983. Funds for procurement of C-2 and used C-9 aircraft are also included, as well as communications suites for EC-130Q aircraft procured in FY 1982.

(b) An advance procurement program of \$927.1 million to finance long lead time material and effort required to insure timely delivery of aircraft planned for procurement in FY 1984 and to take advantage of savings made possible by multiyear procurement. This funding supports conventional procurement of AV-8B, P-14A, F-18, AH-1T, SH-60B, P-3C, E-2C, and SH-2F aircraft in FY 1984, as well as multiyear procurement of A-6E, EA-6B, CH-53E and C-2 aircraft.

(c) An aircraft modification program of \$1,311.1 million to improve the safety-of-flight, operational characteristics, maintainability and reliability of aircraft in inventory, including conversion/modernization in lieu of new procurement.

(d) \$2,080.9 million for the procurement of repairable aircraft spares and repair parts to provide initial outfitting and replenishment support for operational Navy and Marine aircraft and related support equipment.

(e) Other supporting programs of \$480.0 million including aircraft industrial facilities, common ground equipment, other production charges, and war consumables.

#### FISCAL YEAR 1984 HIGHLIGHTS

The FY 1984 authorization program for the Aircraft Procurement, Navy appropriation totals \$12.9 billion. Significant features of the FY 1984 authorization request are:

(a) A procurement program of 359 aircraft at a cost of \$7,182.8 million. Procurement of A-6E, EA-6B, AV-8B, F-14A, F-18, CH-53E, SH-60B, P-3C, E-2C, SH-2F, C-9, C-2, T-34C and TH-57 aircraft is programmed to continue in FY 1984. In addition, AH-1T and F-5E aircraft are scheduled for procurement in FY 1984.

(b) An advance procurement program of \$1,302.3 million to finance long lead time procurement of prime contractor and government furnished equipment, material and effort required to insure timely delivery of aircraft planned for procurement in FY 1985. This includes advance procurement for the initial procurement of the ECX aircraft and funds for multiyear procurement of A-6E, EA-6B, CH-53E, and C-2 aircraft.

(c) An aircraft modification program of \$1,502.8 million to improve the safety-of-flight, operational characteristics, maintainability, and reliability of aircraft currently in inventory, including conversion/modernization of aircraft in lieu of new procurement.

(d) \$2,487.1 million for the procurement of repairable aircraft spares and repair parts to provide initial outfitting and replenishment spares support for operational Navy and Marine aircraft and related aircraft support equipment.

(e) Other support programs of \$424.7 million comprising aircraft industrial facilities, common ground equipment, other production charges, and war consumables.

SUMMARY OF REQUIREMENTS (IN THOUSANDS OF DOLLARS)

	FY 1981 ACTUAL	FY 1982 ESTIMATE	FY 1983 ESTIMATE	FY 1984 ESTIMATE
Combat aircraft.....	\$4,075,859	\$6,094,100	\$7,331,900	\$7,966,900
Airlift aircraft.....	36,854	37,200	284,000	276,200
Trainer aircraft.....	56,321	73,700	57,600	83,000
Other aircraft.....	44,680	138,600	36,300	159,000
Modification of aircraft.....	693,338	926,700	1,311,100	1,502,800
Aircraft spares and repair parts.....	1,095,901	1,541,200	2,080,900	2,487,100
Aircraft support equipment and facilities.....	251,354	328,500	480,000	424,700
TOTAL DIRECT PROGRAM REQUIREMENTS.....	\$6,254,307	\$9,140,000	\$11,582,300	\$12,899,700
Reimbursable program.....	31,503	30,000	30,000	-
TOTAL PROGRAM REQUIREMENTS.....	\$6,285,810	\$9,170,000	\$11,612,300	-
Less: Portion of program to be obligated in subsequent fiscal years.....	1,421,121	1,650,600	2,090,213	-
Plus: Obligations incurred against prior year program funds.....	1,042,090	1,255,758	1,468,795	-
TOTAL OBLIGATIONS.....	\$5,906,779	\$8,775,158	\$10,990,883	-

#### PROGRAM SUMMARY

229 of the 288 aircraft included in the FY 1983 program are combat aircraft. Fighter aircraft being procured include the high performance, air superiority F-14A TOMCAT and the multi-mission F-18 HORNET tactical aircraft. Procurement of the CH-53E helicopter is also continued in FY 1983. Support of the Navy's anti-submarine warfare mission is provided by continued procurement of P-3C ORION aircraft the SH-60B SEAHAWK and SH-2F helicopters. Funds are also requested for the electronic warfare EA-6B PROWLER and the airborne early warning E-2C HAWKEYE. Procurement of the A-6E and AV-8B attack aircraft is also continued in FY 1983. C-2 and used C-9 aircraft will be procured in FY 1983 for airlift requirements, and T-34 and TH-57 aircraft as trainers. Funds are also included for communications suites to be installed in EC-130Q aircraft procured in FY 1982. Advance procurement funds for the FY 1984 program are included for eight aircraft types, and funds for multiyear procurement are included for four others.

Various support programs which contribute significantly to enhance the Navy's and the Marines' combat capability include: modifications required to improve the capabilities of aircraft previously delivered to the Fleet; spares and repair parts to support new aircraft entering the Fleet as well as those already in the operating program; industrial facilities to support the production and maintenance of aircraft; ground handling and training equipment, including simulator procurement; and test and production support equipment and programs required to support aircraft procurement and operations.

The FY 1984 authorization program contains 359 aircraft: 296 of these are combat aircraft. Procurement of A-6E, EA-6B, AV-8B, F-14A, F-18, P-3C, CH-53E, SH-60B, E-2C, and SH-2F aircraft is to be continued, and the AH-1T will be added. C-9 and C-2 airlift aircraft and T-34C and TH-57 trainer aircraft will also continue to be procured and the F-5E trainer will be added.

Support programs included in the FY 1984 authorization request are: modifications required to improve the capabilities of aircraft delivered to the Fleet; spares and repair parts to support both new aircraft and those already in the operating program; and various aircraft support equipment and facilities programs required to support aircraft procurement and operations.

Budget Activity 1: Combat Aircraft

(In Thousands)

FY 1984 Estimate - \$7,966,900  
FY 1983 Estimate - \$7,331,900  
FY 1982 Estimate - \$6,094,100  
FY 1981 Actual - \$4,075,859

Purpose and Scope of Work

Navy and Marine Corps combat aircraft are procured under this budget activity. These aircraft include fixed-wing and rotary configurations and are grouped generally into the categories of attack, fighter, and anti-submarine warfare. In addition to these general categories, aircraft which directly support combat operations in specialized missions, such as aerial assault, command and control, search and rescue, reconnaissance, observation, electronic warfare, and early warning are also procured in this budget activity. Funds are budgeted to procure fully equipped aircraft, including engines and avionics equipment, special ground support and training equipment, and technical publications.

Advance procurement funds are also included to finance long lead time effort, materials, and equipments for the following year program, as well as for multiyear procurement of selected programs.

Justification of Funds

Funds for procurement of eleven different combat aircraft models, including two attack, two fighter, four helicopter, one patrol, one electronic warfare and one early warning type are either budgeted in FY 1983 or requested for authorization in FY 1984. Funds are also included in this budget request for FY 1983 advance procurement requirements for aircraft scheduled for procurement in FY 1984 and for multiyear procurement. The amounts shown below finance: (1) aircraft procurement; (2) advance procurement which is justified separately at the end of the budget activity; and (3) aircraft initial spares and repair parts which are budgeted and justified in Budget Activity 6. Those programs slated for multiyear procurement are followed by (MYP).

A-6E (Attack) INTRUDER (MYP)

(Dollars in Millions)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	8	247.7	8	257.4
Advance Procurement		13.3		35.2
Initial Spares		15.6		18.6

The A-6E is a highly effective attack aircraft. It is equipped with the Target Recognition Attack Multisensor (TRAM) system which gives the A-6E the capability of very accurate night/all weather delivery of nuclear and non-nuclear weapons as well as a night surveillance and identification capability. The FY 1983 request continues procurement of modern tactical attack aircraft for the Navy and Marine Corps.

Beginning with FY 1983 advance procurement, the A-6E airframe is scheduled for multiyear contracting. The plan is for procurement of eight aircraft in FY 1984 and twelve in fiscal years 1985-1987, for total multiyear procurement of 44 aircraft through FY 1987. The A-6E airframe has been chosen for multiyear procurement because it satisfies multiyear selection criteria and will provide a savings of \$20.3 million over conventional procurement.

EA-6B (Electronic Warfare) PROWLER (MYP)

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	6	289.9	6	288.3
Advance Procurement		26.7		68.6
Initial Spares		30.5		35.0

The carrier-based EA-6B is an advanced electronic warfare aircraft which provides protection to Navy strike aircraft by jamming enemy radar-controlled weapons. 102 aircraft were procured in FY 1982 and prior years, including one RDT&E aircraft. Six aircraft are requested in FY 1983, and authorization is requested for six more in FY 1984 and eighteen more in the out years for a total procurement of 132 aircraft. The FY 1983 and FY 1984 requests of six aircraft per year continue the procurement of modern tactical EW aircraft for the Navy and Marine Corps.

The EA-6B airframe has been chosen for multiyear procurement, which should result in a savings of \$21.1 million.

AV-8B (Attack) HARRIER

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	18	677.1	30	798.5
Advance Procurement		73.9		83.6
Initial Spares		191.9		97.7

The AV-8B is an improved vectored thrust V/STOL aircraft based on the AV-8A concept and the PEGASUS 11 engine that has twice the range or payload of the current HARRIER. It combines aerodynamic improvements with the Angle Rate Bombing System for increased weapon delivery accuracy and a new stability augmentation system to reduce pilot workload providing a more capable and reliable light attack aircraft. The AV-8B will meet the Marine Corps' requirement for a light attack aircraft to provide responsive offensive air power that can operate from austere forward sites in direct support of ground forces.

The FY 1983 request of \$677.1 million is for eighteen aircraft, and authorization is requested for procurement of 30 aircraft in FY 1984.

F-14A (Fighter) TOMCAT

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt
Procurement	24 915.3	30 1,106.6	
Advance Procurement	202.4	228.0	
Initial Spares	60.9	67.9	

The F-14A is a high performance, air superiority/fleet air defense fighter capable of air-to-air combat and air-to-surface attack missions. It is a two-place, tandem seat, variable sweep wing, supersonic, carrier-based airborne weapons system. The F-14A has visual attack and all-weather capability to deliver PHOENIX and SPARROW missiles using the AN/AWG-9 weapons system. It also employs the M-61 gun and SIDEWINDER missiles for close-in air-to-air combat.

The FY 1983 budget request includes \$915.3 million for procurement of 24 F-14A aircraft, and authorization is requested to procure 30 aircraft in FY 1984. This will continue an orderly Navy fighter modernization program and maintain fighter force levels. An additional 306 aircraft are programmed for future year procurement for total acquisition of 845 aircraft, including 12 RDT&E aircraft.

F-18 (Fighter) HORNET

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt
Procurement	84 2,443.9	96 2,397.9	
Advance Procurement	283.7	323.0	
Initial Spares	119.8	137.6	

The F-18 is a highly effective tactical aircraft for combat operations. It is a single-seat, twin-engine, carrier-based, multi-mission tactical aircraft that can be configured with fighter or attack capabilities. It will employ SPARROW and SIDEWINDER missiles and the M-61 gun. It will be a lower cost complement to the F-14A, and it will be the Navy's primary fighter for tactical air power projection both over land and at sea. The F-18 will replace aging F-4 and eventually A-7 aircraft.

The total programmed procurement of F-18 aircraft is 1,377, including 11 RDT&E aircraft. The F-18 will be a primary weapons system for the Navy and Marine Corps.

CH-53E (Helicopter) SUPER STALLION (MYP)

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt
Procurement	11 255.6	11	239.5
Advance Procurement	33.5		104.7
Initial Spares	21.9		23.0

The CH-53E is a shipboard compatible heavy transport helicopter for use by both the Marine Corps and the Navy. Marine Corps missions include the lift of heavy equipment and cargo from ship to shore in the amphibious assault, the lift of equipment and supplies during tactical operations ashore and the tactical recovery of disabled aircraft and equipment. Navy missions include vertical onboard delivery (VOD) of high priority parts and personnel to ships on station, the movement of heavy and bulky equipment in support of Mobile Construction Battalions, the offload of supplies and equipment in unimproved ports, the transfer of battle-damaged aircraft from carriers, and the movement of nuclear munitions between storage facilities and ships.

Budget authority is requested for eleven helicopters at a cost of \$255.6 million in FY 1983, and authorization is requested for the procurement of eleven helicopters in FY 1984. This program is scheduled for multiyear procurement, with expected savings of \$62.6 million.

AH-1T (Helicopter) SEA COBRA

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt
Procurement	- -	22	163.9
Advance Procurement	17.2		14.5
Initial Spares	-		17.9

The AH-1T helicopter is an improved version of the Marine AH-1J, which incorporates an uprated twin-pack engine (T400-WV-402) and improved dynamics for increased performance, reliability and hot day performance. It includes structural provisions for the TOW missile, a 20mm nose-mounted turret gun and a wing stores armament management system for selective release of externally carried weapons. The improved SEA COBRA is 58 feet in overall length and the rotor diameter is 48 feet. Maximum take-off weight is 14,000 pounds. The AH-1T helicopter gunship's mission is the en route escort and protection of troop assault helicopters, landing zone preparation immediately prior to the arrival of assault helicopters, landing zone fire suppression during the assault phase, and fire support during ground escort operations.

Authorization is requested for procurement of 22 AH-1T helicopters in FY 1984.



SH-60B (Anti-Submarine Warfare Helicopter) SEAHAWK

(r) SEAHAWK	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	48	858.4	64	916.1
Advance Procurement		137.0		145.6
Initial Spares		236.2		268.1

The SH-60B SEAHAWK is the air sub-system of the LAMPS MK III weapon system. The LAMPS MK III weapon system also includes a ship sub-system and a Recovery, Assist, Securing and Traversing (RAST) sub-system. The Light Airborne Multi-Purpose System (LAMPS MK III) is a computer integrated ship/helicopter system that increases the effectiveness of surface combatants and is optimized for Anti-Submarine Warfare (ASW). The LAMPS MK III helicopter is designated the SH-60B. LAMPS MK III has a secondary mission of Anti-Ship Surveillance and Targeting (ASST). The SH-60B will carry a crew of three, approximately 2,000 lbs of mission avionics, and have provisions for sonobuoys and MK-46 torpedoes. The helicopter will have a mission gross take-off weight of about 20,000 lbs.

The SH-60B helicopter provides a remote platform for deployment of sonobuoys and torpedoes, processing of acoustic and Magnetic Anomaly Detection (MAD) sensor information, and an elevated platform for radar and Electronic Warfare Support Measures (ESM). The ship provides sensor processing, command and control, integrates LAMPS information gained from other sensors, and provides the landing and traversing system, visual landing aids, and maintenance and support facilities for the aircraft.

Budget authority of \$858.4 million in FY 1983 is requested for the procurement of 48 helicopters, and authorization is requested for procurement of 64 in FY 1984. A total program of 209 SH-60B helicopters is scheduled, of which five are RDT&E funded.

P-3C (Patrol) ORION

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	6	280.6	5	241.8
Advance Procurement		48.8		52.3
Initial Spares		12.4		5.9

The P-3C aircraft is a land-based, four-engine, turboprop patrol aircraft. Its primary mission is anti-submarine warfare (ASW): to detect, classify, track, localize, and destroy conventional and high performance submarines; to conduct long range barrier patrols, convoy escort, hold down, hunter-killer operations, and area search in all weather conditions; and to act as in-flight area coordinator at a scene of action. Secondary missions are aerial mining, maritime surveillance, shipping destruction, and intelligence collection.

The P-3C ASW systems include data processing of directional LOFAR (DIFAR), radar, infrared detection set (IRDS), HARPOON, Sonobuoy Referencing System (SRS), electronic support measures (ESM), and magnetic anomaly detection (MAD) equipment. The tactical system includes integrated displays and inertial doppler navigator. The P-3C, with a central digital computer, has the data handling capacity, flexibility and accuracy through digital data processing, to thoroughly integrate appropriate sensor, display, navigation, communications, and armament equipment.

Budget authority of \$280.6 million is requested for six aircraft in FY 1983 and program authorization of \$241.8 million is requested for five aircraft in FY 1984.

E-2C (Early Warning) HAWKEYE

(Dollars in Millions)				
FY 1983		FY 1984		
Qty	Amt	Qty	Amt	
Procurement	6	316.2	6	275.2
Advance Procurement		21.3		26.1
Initial Spares		15.2		13.6

The E-2C is a carrier-based airborne early warning/command and control system designed for Fleet air defense. It provides forces at sea with a modern early warning strike control and surveillance capability.

The E-2C has the same basic airframe as the earlier model E-2A/B but is equipped with new avionics equipment, including new radar antenna and passive detection system. This equipment provides improved capability, including overland detection of air targets. A major feature of the system is greatly enhanced reliability over previous early warning aircraft.

Seventy-nine E-2C aircraft have been funded through FY 1982, including two E-2A prototypes. An additional six aircraft at a cost of \$316.2 million are scheduled for procurement in FY 1983. Authorization is also requested for procurement of six E-2C aircraft at a budgeted cost of \$276.2 million in FY 1984. An additional eighteen aircraft are planned for FY 1985 and subsequent procurement.

SH-2F (Helicopter) SEASPRITE

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	18	169.0	18	179.3
Advance Procurement		20.4		19.8
Initial Spares		15.7		14.1

The SH-2F is a two-place, twin-engine helicopter with a single main-lift rotor and torque-tail rotor. It is the air subsystem of the LAMPS MK I weapons system, deployed aboard FF1040 and FF1052 class frigates in the primary role of anti-submarine warfare. The SH-2F has secondary missions that include SAR, MEDEVAC, and communications relay.

The FY 1983 budget includes \$169.0 million for procurement of eighteen SH-2F helicopters, and authorization of \$179.3 million is requested for eighteen in FY 1984.

#### Advance Procurement

The FY 1983 budget request includes \$878.2 million for advance procurement of material and effort for FY 1984 and for multiyear procurement associated with items of Budget Activity 1. Authorization is requested for FY 1984 advance procurement requirements, totalling \$1,101.4 million, in support of FY 1985 and multiyear procurement.

An itemization of the requirements follows:

#### Advance Procurement for Conventional Procurement Programs (\$ in millions)

<u>Aircraft Model</u>	<u>FY 1984</u>		<u>FY 1985</u>	
	<u>A/C Qty</u>	<u>A. P. in FY 83</u>	<u>A/C Qty</u>	<u>A. P. in FY 84</u>
AV-8B	30	73.9	48	83.6
F-14	30	202.4	30	228.0
F-18	96	283.7	108	323.0
AH-1T	22	17.2	22	14.5
SH-60B	64	137.0	74	145.6
P-3C	5	48.8	5	52.3
E-2C	6	21.3	6	26.1
SH-2F	18	20.4	18	19.8

The advance procurement listed is required to ensure timely delivery of the planned FY 1984 and FY 1985 aircraft programs.

The amounts budgeted for GFE items, engines and some other major GFE items are required for long leadtime effort and material for the prime contractor and their vendors. This includes items such as castings, forgings, landing gear and production engineering requirements. For most GFE, requirements are calculated for each item of equipment, considering the planned aircraft quantity, production leadtime, and prime contractor installation leadtime (i.e., the amount of time the item is needed at the factory prior to aircraft delivery). As the result of these calculations, certain equipments, primarily avionics items, are budgeted as advance procurement to ensure meeting planned aircraft production schedules.

Advance Procurement for Multiyear Procurement Programs  
(\$ in millions)

<u>Aircraft</u>	<u>Quantity</u>	<u>Fiscal Years</u>	<u>A. P. in FY 83</u>	<u>A. P. in FY 84</u>
A-6E	44	1984-1987	13.3	35.2
EA-6B	24	1984-1987	26.7	68.6
CH-53E	61	1984-1988	33.5	104.7

The above programs are scheduled to have multiyear contracting for their airframes. These aircraft programs have been chosen for multiyear procurement because they satisfy multiyear selection criteria.

Following is a detailed cost comparison of conventional versus multiyear procurement for the A-6E, EA-6B, and CH-53E programs, showing the expected savings:

This page is intentionally blank.

This page is intentionally blank.

This page is intentionally blank.

Budget Activity 2: Airlift Aircraft

(In Thousands)

FY 1984 Estimate - \$276,200  
FY 1983 Estimate - \$284,000  
FY 1982 Estimate - \$ 37,200  
FY 1981 Actual - \$ 36,854

Purpose and Scope of Work

This budget activity provides for the procurement of Fleet tactical support aircraft used to fulfill the Navy's airlift support requirements.

Justification of Funds

Funds are requested in FY 1983 for procurement of used C-9B aircraft and for the procurement of eight C-2A, Carrier on Board Delivery (COD) aircraft, as well as advance procurement funds for the procurement of C-2A aircraft in FY 1984. In FY 1984 authorization is requested for two C-9B aircraft, 8 C-2A aircraft, and advance procurement for the subsequent year procurement.

C-9B

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement		\$16.2	2	\$54.0
Advance Procurement		-		-
Initial Spares		-		4.3

The C-9B is a commercial land based aircraft configured to carry either all cargo or all personnel, or a mixture of cargo and personnel.

The request in FY 1983 reflects funding for used C-9B aircraft in order to meet Navy intra-theatre airlift requirements. Authorization is requested for two C-9B aircraft in FY 1984. The program totals 25 production aircraft and an undetermined number of used aircraft. Seventeen aircraft have been procured through FY 1982; eight aircraft at a rate of two per year are programmed for the FY 1984-1987 time frame.



C-2A (Greyhound) (MYP)

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	8	\$218.9	8	\$180.3
Advance Procurement		48.9		41.9
Initial Spares		17.1		17.9

The C-2A is a twin turboprop engine powered personnel/cargo transport type aircraft capable of all weather carrier operations. The internal payload configuration is variable allowing combinations of passengers (28 maximum), MEDEVAC litters (12 maximum), aircraft engines, repair parts, and other high priority cargo.

The C-2 aircraft mission is to provide rapid response Carrier On-Board Delivery (COB) of fleet essential supplies, repair parts, and personnel to deployed carrier battle groups as required to sustain at sea operations.

Budget authority for \$218.9 million is requested in FY 1983 for the initial procurement of eight aircraft. In FY 1984 authorization is requested for the second increment of eight aircraft at a cost of \$180.3 million. The thirty-nine aircraft to be procured for the C-2A program will be the subject of a multiyear procurement contract strategy. It is estimated that savings of \$58.2 million will result from this method of procurement.

Advance Procurement

\$48.9 million is requested in FY 1983 for advance procurement of material and effort for multiyear procurement of the C-2 aircraft. The C-2 airframe has been chosen for multiyear procurement because it satisfied multiyear selection criteria covering stability of requirement, funding and configuration; confidence in cost contractor capability; and savings to the government. Following is a detailed comparison of conventional versus multiyear procurement for the C-2 aircraft program:

C-2 (MYP)

(\$ in millions)

	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>TOTAL</u>
Quantity		8	8	8	8	7	39
<u>Annual Proposal</u>							
Gross		224.8	212.1	201.0	198.4	175.1	1,011.4
Less A.P.		-32.0	-10.8	-12.2	-13.2	-14.3	- 82.5
Net		192.8	201.3	188.8	185.2	160.8	928.9
A.P.	32.0	10.8	12.2	13.2	14.3	-	82.5
TOTAL ANNUAL COST	32.0	203.6	213.5	202.0	199.5	160.8	1,011.4
<u>Multiyear Proposal</u>							
Gross		251.9	202.1	185.5	159.7	151.0	953.2
Less A.P.		-33.0	-21.8	-39.8	-39.1	-63.7	-197.4
Net		218.9	180.3	145.7	120.6	90.3	755.8
Adv. Proc.							
(For 1983)	33.0	-	-	-	-	-	33.0
(For 1984)	1.1	20.7	-	-	-	-	21.8
(For 1985)	1.0	11.9	26.9	-	-	-	39.8
(For 1986)	1.0	8.7	8.0	21.4	-	-	39.1
(For 1987)	.9	7.6	7.0	11.9	36.3	-	63.7
TOTAL	37.0	48.9	41.9	33.3	35.3	-	197.4
TOTAL MULTIYEAR COST	37.0	267.8	222.2	179.0	156.9	90.3	953.2
SAVINGS	+ 5.0	+64.2	+ 8.7	-23.0	-42.6	-70.5	- 58.2

Budget Activity 3: Trainer Aircraft

(In Thousands)

FY 1984 Estimate - \$ 83,000  
FY 1983 Estimate - \$ 57,600  
FY 1982 Estimate - \$ 73,700  
FY 1981 Actual - \$ 56,321

Purpose and Scope of Work

The Naval Air Training Command needs modern aircraft specifically designed for aircrew training in order to provide the Navy, Marine Corps, and Coast Guard with well trained and highly skilled pilots, navigators, and other aircrew members. Aircraft procured under Budget Activity 3 are used to train students in basic and advanced flying techniques, navigation, instrument flying and numerous other skills which they must acquire before making the transition to high performance Fleet aircraft.

Justification of Funds

Funds are requested in FY 1983 for procurement of thirty T-34C aircraft and twenty-one TH-57 helicopters. In FY 1984 authorization is requested for twenty-eight T-34C aircraft and four F-5E aircraft as well as twenty-one TH-57 helicopters.

T-34C (Trainer) HENTON

(Dollars in Millions)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	30	\$34.4	28	\$31.8

The T-34 is a single engine, turboprop powered primary training aircraft.

The mission of the T-34 is to train student aviators in primary flight techniques. In FY 1983 authority is requested to procure thirty aircraft while in FY 1984 authorization is requested for a procurement of twenty-eight aircraft. The T-34 total program is 449 aircraft, including two procured with R&D funds. In FY 1982 and prior, 305 aircraft have been procured.

F-5E (Trainer) FREEDOM FIGHTER

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	-	-	4	\$28.2
Initial Spares	-	-	-	4.6

The F-5E is a high-performance supersonic tactical fighter. It is currently assigned to the Navy Fighter Weapons School at Miramar and NAS, Oceana. It is used as an adversary (MIG) simulator for realistic air combat training. Authorization is requested in FY 1984 to procure four of these aircraft. This is the first increment of a planned procurement of sixteen aircraft at four per year through FY 1987.

TH-57 (Trainer) SEA RANGER

	(Dollars in Millions)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	21	\$23.2	21	\$23.0

The TH-57 is a single engine trainer helicopter derived from the Bell Model 206A. It is used to train student aviators in primary helicopter flight techniques.

In FY 1982 and prior, 112 aircraft have been procured. Budget authority is requested in FY 1983 to procure twenty-one aircraft while in FY 1984 authorization is requested for an additional twenty-one TH-57's for a total program of 144.

Budget Activity 4: Other Aircraft

(In Thousands)

FY 1984 Estimate - \$159,000  
FY 1983 Estimate - \$ 36,800  
FY 1982 Estimate - \$138,600  
FY 1981 Actual - \$ 44,680

Purpose and Scope of Work

Aircraft other than those associated with combat, airlift, and training missions are procured under Budget Activity 4.

Justification of Funds

No aircraft in this category are planned for procurement in FY 1983 and FY 1984; however, funds are requested for advance procurement for the ECX (TACAMO) aircraft and for the procurement of Airborne Very Low Frequency (AVLF) Communication Suites.

ECX (TACAMO)

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt

Advance Procurement	-	-	-	\$159.0
---------------------	---	---	---	---------

The ECX is the replacement aircraft for the TACAMO mission aircraft. Its mission is to provide a survivable communications connectivity between the Nation Command Post and Fleet Ballistic Missile Submarines. In FY 1984 authorization is requested for advance procurement in support of the initial procurement of three aircraft in FY 1985. This is the first procurement of a fourteen aircraft total program.

EC-130Q (TACAMO) HERCULES

(Dollars in Millions)			
FY 1983		FY 1984	
Qty	Amt	Qty	Amt

Procurement	-	\$36.8	-	-
-------------	---	--------	---	---

The EC-130 is a basic C-130 aircraft, modified for airborne communications. The EC-130 provides an airborne communications relay interfacing with national Command and Control authorities.

The request in FY 1983 provides for the procurement of two Airborne Very Low Frequency (AVLF) Communication Suites for installation in the FY 1982 Aircraft. This meets force level requirements during the time period prior to introduction of the ECX aircraft. The two EC-130s being procured in FY 1982 were originally envisioned as replacement aircraft. These will now be fitted with AVLFs and utilized in the Minimum Essential Emergency National Command Authority.

Budget Activity 5: Modification of Aircraft

(In Thousands)

FY 1984 Estimate - \$1,502,800  
FY 1983 Estimate - \$1,311,100  
FY 1982 Estimate - \$ 926,700  
FY 1981 Actual - \$ 693,338

Purpose and Scope of Work

The Aircraft Modification program funds incorporation of technical improvements which substantially modernize the operational capabilities; improve the maintainability, reliability, and safety; and extend the service life of aircraft which have entered the Fleet. Budget estimates and authorization requests include funds for modernization/conversion programs undertaken in lieu of procurement of new aircraft in order to fill inventory and force level requirements.

Justification of Funds

In order to fulfill inventory requirements, it has become mandatory to operate many older aircraft in the inventory beyond their originally programmed service life and update their weapon systems so that they remain capable of continued effective operation in new threat environments. To accomplish these two objectives, the Navy pursues service life extension and weapons modernization programs. These conversions often involve complex engineering changes which require a major production effort and are usually accomplished at a contractor's facility, with aircraft inducted into an assembly line for the conversion/modernization programs. A substantial portion of the funds requested in FY 1983 and FY 1984 are for modifications in this category.

The FY 1983 budget request and the FY 1984 authorization request also include funds for incorporation of other modifications intended to enhance the operational capabilities of in-service aircraft or their safety-of-flight, maintainability or reliability. Only essential modifications or changes which are necessary to satisfy the most urgent operational requirements are included in this budget request.

Justification for the FY 1983 budget request and for the FY 1984 authorization is provided by a narrative summary highlighting high cost, essential modifications, and a "back-up" section containing a detailed description of each individual modification in the budget request with a funding requirement in excess of \$2.0 million. The installation cost of all FY 1980 and subsequent modification programs is budgeted in the Operations and Maintenance, Navy appropriation.

The following narrative summary highlights modification requirements by aircraft series and model.

#### A-3 Series Modification

The FY 1983 budget request and FY 1984 authorization request include \$7.3 million and \$2.4 million respectively for A-3 series aircraft modifications. \$6.2 million in FY 1983 is budgeted for the final phase of the EA-3B Sustainability program. The current ESM suite is rapidly becoming outmoded and unsupportable. This modification will provide selected updated, replaceable components designed to enhance mission effectiveness and alleviate logistics support problems. Additionally, \$1.8 million in FY 1983 and \$2.4 million in FY 1984 are included for the AN/ARC-159 Radio program. Two small modifications totalling \$.3 million in FY 1983, the Fire Warning program and the AN/ALR-63 Replacement of Obsolete Parts effort, are also included.

#### A-4 Series Modification

\$31.1 million in FY 1983 and \$22.5 million in FY 1984 are requested for A-4 series aircraft modifications. The final increment for the Angle Rate Bombing System (ARBS) is included in FY 1983. The ARBS provides improved bombing accuracy and first pass acquisition capability for U.S. Marine Corps close air support A-4M aircraft. \$22.6 million in FY 1983 is budgeted for this program. \$6.2 million in FY 1983 and \$8.8 million in FY 1984 are associated with the AN/APR-43 Compass Sail Clockwise programs for TACA (OA-4M) and A-4M aircraft. Working in conjunction with the AN/ALR-45F radar warning receiver (budgeted under the Common ECM line), the system will provide needed additional combat mission essential countermeasures warning and direction finding capability. The ALQ-162 Clockwise Jammer for TACA and A-4M aircraft, a new start in FY 1983, will require \$.7 million in FY 1983 and \$5.1 million in FY 1984. This system provides complementary DECM jamming capability to the AN/ALQ-126 DECM Jammer and works in conjunction with the AN/APR-43. In the event of AN/APR-43 failure, the system has a stand-alone capability. Finally, \$1.5 million in FY 1983 and \$1.4 million in FY 1984 are requested for the ARN-118 TACAN. For the FY 1984 authorization request \$3.9 million is requested for the incorporation of MAVERICK missile provisions into the A-4M to provide highly accurate anti-armor/anti-fortification capability, \$2.8 million is requested for the Air Data Computer System Improvement, and \$.6 million is requested for the ARC-182 Radio.

#### A-6 Series Modification

A total of \$184.4 million in FY 1983 and \$238.0 million in FY 1984 is requested for various A-6 modifications. Paramount among them is the Target Recognition and Attack Multisensor (TRAM). The TRAM program provides the A-6E with improved capability for location and surveillance of opposing Naval Forces and countering of their operations during periods of darkness, allowing maximum night identification and 24-hour strike capability. The system includes a passive imaging infrared sensor and a laser search set located in a 20-inch diameter, space stabilized turret. \$53.0 million in FY 1983 and \$74.3 million in FY 1984 are requested to continue TRAM equipment procurements.

\$40.3 million in FY 1983 is requested for the final increment of Carrier Aircraft Inertial Navigation Systems (CAINS)/Communications, Navigation IFF (CNI) modification. This program will provide considerable operational improvements over the ASN-31 Inertial Navigation System, while at the same time increasing the reliability of the system and achieving commonality with the F-14A, S-3A, E-2C, and new product on A-6E aircraft.



A-6 Series Modification cont'd

Heavy wing loadings and high-G maneuvers have accelerated the service life completions of older A-6E aircraft necessitating the A-6E Rewing (SLEP) program. An ongoing effort, \$26.6 million in FY 1983 and \$41.8 million in FY 1984 is requested to continue the program to maintain an adequate inventory of A-6E aircraft and avoid degradation of Fleet readiness.

Other significant on-going programs include the A-6E Weapon Control System Improvement, the A-6E to KA-6D TANKER, and the Vertical Display Indicator. The Weapon Control System Improvement will simplify and consolidate Weapon Control System configurations by modifying the aircraft's 4 Pi computer with a double density memory capability, thus providing the additional capacity required for successful operation of all current weapons (i.e., SIDEWINDER, WALLEYE, etc.). The FY 1983 budget request includes \$8.5 million in FY 1983 and \$11.3 million in FY 1984 for this program. In order to provide a sufficient quantity of aircraft configured for inflight refueling of other aircraft, \$12.2 million in FY 1983 and \$19.1 million in FY 1984 are requested for the A-6E to KA-6D TANKER program. Once converted, the KA-6D carries 20,000 pounds of fuel which it can transfer at a rate of 350 gallons per minute. The Vertical Display Indicator (VDI) is a dynamic contact analog TV display composed of easily identified ground and sky textures integrated with flight path presentations which assist the pilot during take-off, navigation, attack, and landing. To continue this program, \$4.8 million and \$10.4 million are requested in FY 1983 and FY 1984, respectively.

\$10.9 million in FY 1983 and \$23.0 million in FY 1984 are requested to proceed with the KA-6D R&M Update Modification. This program will bring the configuration of older tankers, A-6As converted to KA-6Ds under a previous CILOP effort, up to the latest configuration as well as incorporate improvements to increase reliability and maintainability.

Smaller programs for which funding is requested in FY 1983 and FY 1984 include: the APQ-156 Radar, \$1.7 million in FY 1983 and \$6.3 million in FY 1984; the KA-6D ARC-182 Radio effort, \$1.5 million in FY 1983 and \$2.6 million in FY 1984; the USH-17/UPQ-5 Improvement program, \$2.6 million in FY 1983 and \$1.3 million in FY 1984; Landing Gear Improvements, \$1.6 million in FY 1983 and \$2.9 million in FY 1984; the Stabilizer Shift modification, \$.4 million in FY 1983 and \$.4 million in FY 1984; the ALE-39 Chaff Dispenser for the KA-6D, \$.8 million in FY 1983 and \$.3 million in FY 1984; and the final increment of the Electroluminescent Lights modification, \$.1 million in FY 1983.

Approximately \$19.4 million in FY 1983 is budgeted for new starts. The largest initiative, \$9.1 million in FY 1983, will procure the AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System which will provide detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. \$14.5 million in FY 1984 is also requested for this program. A second new start program, the A-6E Weapons Integration effort, will provide increased capability, compatibility and simplify incorporation of new weapons and avionics systems projected for the A-6E. The FY 1983 budget request and FY 1984 authorization request includes \$6.3 million and \$12.4 million, respectively, for this effort. Other new starts include Radar Data Converter.

A-6 Series Modification cont'd

Improvements, a reliability and maintainability modification for which \$1.8 million in FY 1983 and \$7.2 million in FY 1984 are requested; A-6 Automatic Flight Control System Improvements, \$1.2 million in FY 1983 and \$1.0 million in FY 1984; the Battery Improvement modification, \$1.0 million and \$.5 million in FY 1983 and FY 1984, respectively; and the A-6E ARC-182 Radio, \$3.0 million in FY 1984.

Authorization is requested in FY 1984 for the Standoff Air-to-Ground Weapons program, \$5.7 million.

EA-6 Series Modification

In the FY 1983 budget request and FY 1984 authorization request, \$91.1 million and \$87.3 million, respectively, are included for EA-6 modifications. Among the most significant is the ICAP II program for which \$17.1 million in FY 1983 and \$10.7 million in FY 1984 are budgeted. The ICAP II modification will improve jamming techniques, flexibility and frequency coverage, enhance survivability in close support via cooperative countermeasures, improve reliability and maintainability, and improve the on-board computing capacity to accommodate the growth of the tactical jamming system.

Another important EA-6 modification, budgeted at 6 million in FY 1983 and \$26.1 million in FY 1984, is the ALQ-99 Pods modification. This modification consists of the refurbishment of existing pods and the purchase of additional ALQ-99 jammer pods. Refurbishment of existing pods will lessen significantly the damage to pod components which occurs due to circuitry malfunction; additional pods are required to support increased aircraft inventories.

The EA-6A Weapons System Update (ALQ-76/86) program will improve the present manually operated Electronic Countermeasures System (ECM) which has been degraded due to length of service life. Goals of the program include increased reliability and maintainability, increased jammer power output (ALQ-76), increased receiver clarity (ALQ-86), and overall, greater ease of operation. \$8.6 million in FY 1983 and \$7.7 million in FY 1984 are requested for this effort.

Included in the FY 1983 budget request and FY 1984 authorization request are \$13.3 million and \$13.0 million, respectively, for the Signal Data Converter (SDC)/Inertial Navigation System (INS). This effort will replace the current dead-reckoning doppler navigation system to provide the necessary accuracy required for effective employment of the EA-6B weapons system and by doing so, will measurably enhance reliability, improve readiness, and demonstrably lessen life cycle cost.

Additional EA-6 modifications include; EA-6A DECM Provisions, \$2.5 million in FY 1983 and \$3.5 million in FY 1984; \$1.6 million in FY 1983 and \$2.8 million in FY 1984 for the ARC-182 Radio; and the APS-130 Radar program for the EA-6A, \$4.8 million and \$4.0 million in FY 1983 and FY 1984, respectively. Several small modifications are scheduled to complete in FY 1983: the KY-75 program, \$.5 million; the ALE-39 \$.2 million; and the ALE-41, \$.2 million.

EA-6 Series Modification cont'd

Planned new starts budgeted in the FY 1983 budget request and FY 1984 authorization request include the AYK-14 Computer, the ALR-67 and the Supplemental Cooling Turbine modifications. \$11.5 million in FY 1983 and \$6.0 million in FY 1984 are requested for the AYK-14 Computer program, incorporation of which represents a significant improvement in capacity, reliability and logistical commonality over the existing system. For the AN/ALR-67 Receiving Set, Countermeasures (DECM) Improvement, \$5.9 million in FY 1983 and \$10.7 million in FY 1984 are requested. The Supplemental Cooling Turbine program, \$3.3 million in FY 1983 and \$1.6 million in FY 1984, will provide sufficient cooling airflow for present and future needs. Finally, \$1.2 million is requested in FY 1984 to complete the Air Data Computer program.

A-7 Series Modification

For various modifications to A-7 Series aircraft, \$105.4 million in FY 1983 and \$133.7 million in FY 1984 are requested. Of the total program requested, \$19.8 million in FY 1983 and \$41.8 million in FY 1984 are associated with the A-7E/TA-7C FLIR. Incorporation of the FLIR (Forward Looking Infrared Radar) system will provide a passive night vision capability to enhance the weapons delivery accuracy of the A-7E during night operations. The FLIR provides the A-7 a first-pass visual attack capability at night with a bombing accuracy two times better than that which can be achieved by true (blind) radar weapon delivery.

\$27.6 million in FY 1983 and \$30.1 million in FY 1984 are requested for continuation of the A-7 TF-41 HELP effort. The TF-41 Engine Hot Section Extended Life Program (HELP) will incorporate redesigned hot section and control components to improve operational readiness, reduce turbine failure, and minimize the cost of ownership.

In order to improve reliability and operational effectiveness of the AN/APQ-126 radar, \$12.4 million in FY 1983 and \$6.9 million in FY 1984 are requested for the Digital Scan Converter modification. Designed to improve reliability by 45 percent, the Digital Scan program will also include improvements in weapons delivery, beacon bombing, and FLIR/WALL-EYE display options.

The AN/APR-43 radar warning receiver will operate in conjunction with the combat mission essential AN/ALR-45F and will provide countermeasures warning and direction finding capability beyond that provided by the existing system. To accomplish this necessary modification, \$9.8 million in FY 1983 and \$12.1 million in FY 1984 are requested.

\$14.6 million in FY 1983 is requested for the A-7E HARM modification, which will retrofit HARM capability into FLIR configured aircraft. This program will continue the procurement of modification kits, HARM peculiar avionics, and the procurement of modified kits for the AERO-5 launcher. For the final increment of this program, authorization of \$15.1 million is requested in FY 1984.

#### A-7 Series Modification cont'd

Additionally, \$5.1 million in FY 1983 and \$4.2 in FY 1984 are requested for the AN/ALQ-162 Countermeasures Set. Working in conjunction with the AN/APR-43 Radar Warning Receiver, the AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The addition of the AN/ALQ-162 will result in a significant increase in the survivability for Navy tactical aircraft against radar directed air defense systems.

Also included in the FY 1983 budget request and FY 1984 authorization request are various other A-7 modifications including \$3.0 million in FY 1983 and \$2.5 million in FY 1984 for the Fuel Quantity Indicator modification; \$2.4 million in FY 1983 and \$2.8 million in FY 1984 for the AN/ASN-90 Improvements; \$4.0 million in FY 1983 and \$3.1 million in FY 1984 for Automatic Maneuvering Flaps; \$3.0 million in FY 1983 and \$5.4 million in FY 1984 for WALLEYE Pods; \$1.2 million in FY 1983 and \$1.2 million in FY 1984 for the Nose Landing Gear "Fail Safe" Steering; \$0.9 million in FY 1983 for the Boresight Mounts modification; and \$1.6 million in FY 1983 for the Generator Control Panel change. Two programs for which FY 1984 authorization are requested are the Air Data System Improvement (\$2.2 million) and MAVERICK Provisions (\$7.3 million).

#### AV-8 Series Modification

Of the \$10.9 million and \$3.7 million budgeted for AV-8 modifications in FY 1983 and FY 1984, foremost among them is the DECM Pod program for which \$4.9 million and \$1.3 million are requested, respectively. The Defensive Electronic Countermeasures (DECM) Pod modification will provide the AV-8A/C with both pulse and CW jamming capability. The aircraft currently has no such defensive ECM capability, and this program will contribute significantly to aircraft survivability in a hostile environment.

The last increment of the On Board Oxygen Generating System (OBOGS) is also included in the FY 1983 request. Incorporation of this system increases reliability and eliminates safety hazards associated with the handling of liquid oxygen. \$3.4 million in FY 1983 is requested for this program.

Finally, \$2.5 million in FY 1983 and \$2.4 million in FY 1984 are requested for the Sealed Lead Acid Battery Modification. Historically a high maintenance manhour consumer, this change will provide a more reliable battery system with a minimum useful service life of six months.

#### F-4 Series Modification

In the FY 1983 budget request and FY 1984 authorization request, \$22.7 million and \$16.6 million, respectively, are identified for F-4 series modifications. The primary effort is directed toward the AN/AWG-10A Obsolescence/Reliability and Maintainability improvement. Due to the age of the AN/AWG-10A, an essential part of the F-4 Weapons System, several critical components and subassemblies are no longer obtainable and must be replaced with qualified substitutes. To insure that the AN/AWG-10A will remain a viable system, \$13.9 million in FY 1983 and \$6.3 million in FY 1984 are required.

#### F-4 Modification Series cont'd

Currently, the F-4S has only one UHF communications transceiver with one auxiliary receiver which, due to the age of the equipments, are becoming increasingly unreliable. In order to provide a backup to this system, \$5.4 million in FY 1983 and \$6.3 million in FY 1984 are requested for the procurement of AN/ARC-159 Radios.

Additionally, \$2.9 million in FY 1983 and \$4.0 million in FY 1984 are requested to continue the Follow on Structural Fatigue effort and \$.5 million in FY 1983 is requested to complete the Replacement of Aluminum Hydraulic/Pneumatic lines modification.

#### RF-4 Series Modification

Several RF-4 modification programs are listed in the FY 1983 budget request and FY 1984 authorization request totalling \$9.9 million and \$3.1 million, respectively. Largest among them is the RF-4B Low Smoke Provisions which, by modifying the existing J79-GE-8 engine to a smokeless J79-GE-10B engine, will reduce the visual acquisition range and prevent distant recognition of RF-4B aircraft. A distinct advantage in operational environments, \$4.6 million in FY 1983 is required to continue this program and \$3.1 million in FY 1984 is requested to complete it. Another RF-4 modification for which \$2.9 million in FY 1983 is requested is the AN/APR-43, which is an improved radar warning receiver designed to replace the ALR-50. Lastly, \$2.4 million and \$1.0 million in FY 1983 and FY 1984, respectively, are requested for the AN/ALQ-162 Clockwise Jammer.

#### F-5 Series Modification

The only F-5 modification program included in the FY 1983 budget request is the Structural Fatigue Program which will correct known potential structural fatigue items. \$.2 million is requested in FY 1983 to complete this program.

#### F-8 Series Modification

Two F-8 series modifications are budgeted in the FY 1983: the APN-194 Altimeter, \$.6 million and \$.2 million in FY 1983 and FY 1984, respectively, and the ALE-39 Chaff Dispensing Set \$.6 million in FY 1983.

#### F-14 Series Modification

Budget authority of \$166.8 million in FY 1983 and authorization of \$214.1 million in FY 1984 are requested for F-14 modification programs. Of major importance is the TF-30 Engine Improvement package budgeted at \$111.7 million in FY 1983 and \$84.9 million in FY 1984. Because the F-14A aircraft has demonstrated greater than expected capability, the present engine has been exposed to a more demanding environment than envisioned. As a result, the shortcomings of the engine have been revealed and have had a significant detrimental effect on the operational readiness of the aircraft. To alleviate the situation, this program will redesign and replace engine components to achieve improved durability, reliability, and maintainability. \$12.2

F-14 Series Modification cont'd

million in FY 1983 and \$15.5 million in FY 1984 are requested to procure Expanded Memory Computer Modules that will reduce the weight, volume, and required cooling of the AWG-9 Computer presently on-board the F-14A. The Television Camera Sight Unit (TCS), will provide the pilot and radar intercept officer (RIO) of an F-14A the ability to visually identify airborne targets at long stand-off ranges during day clear weather conditions. To accomplish this modification, \$18.5 million and \$21.3 million in FY 1983 and FY 1984, respectively, are requested.

\$3.0 million in FY 1983 is requested to complete the Replacement Wiring Harness effort. A safety modification, the replacement harness program represents Phase I of a major F-14 Aircraft Rewiring program which will substitute new HALAR wire (more resistant to fluids and cracking) for the present "Poly-X" wire and introduce corrosion-resistant cadmium connectors. Phase II of this program requires \$6.3 million in FY 1983 and \$9.9 million in FY 1984. Due to water and cleaning solution intrusion, deterioration of the Weapons Rails, upon which PHOENIX capability is dependent, is becoming increasingly evident. \$1.9 million in FY 1983 and \$12.2 million in FY 1984 are requested for this program. Other reliability and maintainability initiatives include the Spoiler Actuator Water Integrity program (\$1.2 million in FY 1983 and \$1.7 million in FY 1984), the Hydraulic System Cavitation Damper effort (\$1.1 million in FY 1983 and \$1.1 million in FY 1984), and a variety of smaller programs totalling \$2.5 million in FY 1983 and \$1.4 million in FY 1984.

The AN/ARC-182 Radio program is included in the FY 1983 budget request and FY 1984 authorization request. In order to provide the F-14A with VHF and UHF secureable voice communications, \$2.1 million and \$1.9 million in FY 1983 and FY 1984, respectively, are requested. \$3.2 million in FY 1983 and \$1.3 million in FY 1984 are requested for the Nose Wheel Steering Damper modification which will significantly enhance the maintainability of the steering shaft unit. Additionally, \$1.8 million in FY 1983 and \$1.1 million in FY 1984 are budgeted for the AIM-9 Seeker Head, and \$1.3 million and \$3.7 million in FY 1983 and FY 1984 are requested for Structural Improvements.

Authorization in FY 1984 is requested for the AWG-9 PSP, AN/ALR-67, Fire Warning System, and ECS for PSP programs. The AWG-9 Digital Modification Update will incorporate two new digital electronic units and a digital display into the AWG-9 and \$31.7 million is requested for this purpose. The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is included in the FY 1984 authorization request and budgeted at \$24.9 million. Finally, \$1.2 million in FY 1984 is requested for the continuation of the Fire Warning System and \$.3 million is requested for the ECS (Environmental Cooling System) for the PSP, a companion program to the AWG-9 modification which will insure sufficient ambient air flow to prevent overheating of the new components.

#### F-18 Series Modification

Included in the FY 1983 budget request and FY 1984 authorization request are \$17.8 million and \$44.1 million, respectively, for F-18 series modifications. Largest of these amounts, \$7.0 million in FY 1983 and \$4.4 million in FY 1984 are budgeted for the AN/ALR-67 Receiving Set, Countermeasures Warning and Control System which will provide detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. \$3.4 in FY 1983 and \$3.8 million in FY 1984 are requested for Correction of Discrepancies in delivered F-18 aircraft which will update these aircraft to the present configuration of in-production aircraft. The last increment of the F-404 Engine Bearing Improvement, \$.4 million in FY 1983, is also budgeted.

New starts for the F-18 series introduced in the FY 1983 budget request are the Non-Cooperative Target Recognition effort, \$3.5 million in FY 1983 and \$4.0 million in FY 1984, which will significantly add to the pilot's ability to discern whether an unknown target beyond the visual acquisition range is friend or foe; the One-Box INS (Inertial Navigation Set) reliability change, \$1.6 million and \$4.0 million in FY 1983 and FY 1984, respectively; AIM-7M Sparrow provisions, \$1.0 million in FY 1983 and \$3.1 million in FY 1984; TACTS (Tactical Aircrew Combat Training) provisions, \$.4 million in FY 1983 and \$2.1 million in FY 1984; and the Dual Chamber Landing Gear improvement, \$.5 million and \$1.5 million in FY 1983 and FY 1984, respectively.

Three programs are scheduled to begin in FY 1984: the F-404 Engine Improvement (\$9.7 million); the Correction of BIS Discrepancies effort (\$9.0 million); and the Elimination of Fuel Vapor Puffs modification (\$2.5 million).

#### OV-10 Series Modification

\$1.7 million in FY 1983 and \$7.6 million in FY 1984 are requested for OV-10 modifications. The LTN-211 OMEGA Navigation System, \$1.7 million in FY 1983 and \$1.4 million in FY 1984 will provide the OV-10D with improved, modern, high-accuracy navigation capability. Authorization in FY 1984 is requested for the OV-10D SLEP, (\$2.1 million) which will extend the aircraft's effective service life into the late 1990's, the AN/ALQ-144 IR Jammer (\$1.7 million), and the APR-39 Radar Warning Receiver (\$2.1 million)

#### H-46 Series Modification

\$51.0 million in FY 1983 and \$133.0 million in FY 1984 are requested for various H-46 modifications. One of the largest of the FY 1983 programs is the Fiberglass Blade modification which, at a cost of \$15.5 million in FY 1983, will not corrode, will have insignificant environmental degradation, and will increase the mean time between removal by 500 percent.

The most significant H-46 program, the Safety, Reliability and Maintainability (S,R&M) Update, will require \$16.0 million in FY 1983 and \$102.4 million in FY 1984. Current planning calls for the use of H-46 series aircraft through the mid-1990's. Needed corrective action must be performed on these aging aircraft to avoid serious impact on safety, fleet readiness, and

#### H-46 Series Modification cont'd

exorbitant cost of ownership. Planned modifications involve changes to ensure the adequacy of the basic airframe structure as well as improvements to various system components to improve reliability and maintainability. Also requested are \$8.0 million in FY 1983 and \$8.5 million in FY 1984 for the ALQ-157(V) IR Jammer. Procurement of an Infrared Jammer for the CH-46, applicable to all USN/USMC helicopters, will provide a needed system to degrade the tracking capability IR homing missiles.

The Night Vision modification will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. \$5.9 million in FY 1983 and \$8.3 million in FY 1984 are budgeted for this effort. Additionally, \$3.5 million and \$4.9 million in FY 1983 and FY 1984, respectively, are budgeted for the Engine Air Particle Separator and \$2.2 million in FY 1983 and \$2.5 million in FY 1984 are budgeted for the ARN-118 TACAN.

A total of \$6.4 million is requested for the AN/ARC-182 Radio and the ALE/APR-39 programs in the FY 1984 authorization request as well.

#### H-53 Series Modification

In the FY 1983 budget request and FY 1984 authorization request, \$29.2 million and \$18.9 million, respectively, are identified for H-53 modifications. The ALE-39/APR-39 program will provide a lightweight radar warning receiver and chaff dispenser for use in evasive maneuvers or ECM employment at a cost of \$7.7 million in FY 1983. Additionally, \$6.7 million in FY 1983 is requested for the AN/ALQ-157(V), an IR Jammer that degrades the capabilities of IR homing missiles, a serious threat to tactical helicopters against which current defenses are inadequate. \$6.4 million in FY 1984 is required to complete the program. Crashworthy Armored Pilot Seats, the only new start for H-53 modifications in FY 1983, will provide improved helicopter crash survivability and by doing so, save a substantial number of lives. To fund this effort, \$7.9 million in FY 1983 and \$5.4 million in FY 1984 are requested. The Night Vision program will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. \$2.8 million and \$4.1 million in FY 1983 and FY 1984, respectively, are requested.

Other continuing programs for which funding is requested include: the Glass Faced Windshield modification, \$2.1 million in FY 1983 and \$1.3 million to complete it in FY 1984; the APP Disc Clutch change, \$1.8 million in FY 1983 and \$1.7 million in FY 1984; and the Winsh Engine and Thrust Washer programs, which require \$.1 million each in FY 1983.

#### H-1 Series Modification

The FY 1983 budget request, \$18.9 million, and the FY 1984 authorization request, \$37.1 million, for H-1 Series modifications, includes \$5.8 million in FY 1983 and \$3.1 million in FY 1984 for the AN/APR-44 for AH-1J/T and UH-1N helicopters. This program will provide a continuous wave (CW) warning receiver intended for use on helicopters which satisfies the current



#### H-1 Series Modification cont'd

shortfall of CW capability in assault and attack helicopters. \$2.5 million in FY 1983 and \$12.5 million in FY 1984 are also requested for the ALQ-136 high band DECM system required by Marine Corps attack helicopters. The Night Vision program will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. Planned procurement of this system for UH-1 and AH-1 helicopters will cost \$3.5 million in FY 1983 and \$10.3 million in FY 1984. \$1.1 million in FY 1983 and \$.8 million in FY 1984 are requested for AIM-9 SIDEWINDER provisions to provide a long range weapon capability to increase combat survivability in attack helicopters. A program to provide the necessary support items for the transition from out-of-production metal blades to new composite blades is included and \$1.8 million in FY 1983 and \$1.3 million in FY 1984 are requested for this effort. Also \$3.0 million in FY 1983 is included to procure the AN/ASC-26 Command and Control Communications Central which will allow field troop command from an airborne platform. The Battery Fault Improvement and the UH-1 Skis program will cost \$.8 million and \$.4 million, respectively, in FY 1983.

Authorization is requested for the IR Suppressor program in FY 1984 which will reduce/preclude attack by heat-seeking (IR) missiles (\$4.6 million). Finally, the FY 1984 authorization request includes: \$2.0 million for the Crashworthy Fuel System; \$1.7 million for the H-1 FACTS (FLIR Augmented Cobra Tow Sight); \$.6 million for the Radar Altimeter change; and \$.2 million for the UH-1N Portable Fire Extinguisher.

#### H-2 Series Modification

Of the \$3.9 million in FY 1983 and \$2.9 million in FY 1984 budgeted for H-2 modifications, \$3.8 million in FY 1983 is associated with the Avionics Improvement program. An ongoing effort, FY 1983 funding represents the last increment of this program to update the LN-66HP Radar, DIFAR/DICASS, and AN/ASN-123 Navigation systems. \$.1 million in FY 1983 and \$.1 million in FY 1984 are requested for the Composite Doubler which will reduce blade delaminations. Finally, authorization in FY 1984 is requested for the Composite Tail Pylon modification currently budgeted for \$2.8 million.

#### H-3 Series Modifications

A total of \$20.6 million in FY 1983 and \$39.7 million in FY 1984 are budgeted for H-3 series modification. By far the most important initiative is the SH-3H Service Life Extension Program (SLEP) for which \$18.7 million and \$37.4 million are requested in FY 1983 and FY 1984 respectively. This program will include extensive rework or replacement of dynamic components, degraded structural components, out-moded flight controls and instrumentation, unreliable emergency flotation gear, and a general rewiring of the aircraft electrical system. \$1.9 million in FY 1983 and \$.8 million in FY 1984 are requested for the Nicad Battery Constant-Current Charge/Monitor System which will reduce battery maintenance and prevent possible explosions through thermal runaway. The only new start in FY 1984 is the Crashworthy Pilot Seats program, \$1.5 million.

#### P-3 Series Modification

Included in the FY 1983 budget request and FY 1984 authorization request are \$119.8 million and \$121.9 million, respectively, for P-3 modifications. Of these amounts, \$29.9 million in FY 1983 and \$26.4 million in FY 1984 are associated with HARPOON related modifications. HARPOON modified P-3B/C aircraft will be capable of carrying and launching four HARPOON missiles. Provisions for the HARPOON Airborne Command and Launch System include pylon modification, wing wiring, inter-connecting cables and data processor, logic unit control panel and other equipment.

IRDS (Infrared Detecting System), for which \$20.1 million in FY 1983 and \$21.5 million in FY 1984 are requested, is an electro-optical surveillance system capable of recognizing and identifying surface targets including submarine periscopes and snorkels under night conditions. The system consists of night imaging sensors and associated electronics and display, with a video recorder used in conjunction with the system.

Incorporation of two new capabilities into the P-3B/C AQA-7 acoustic processing system, the Triple Vernier and the DICASS improvements, is greatly needed to meet the submarine threat of the 1980's. Triple Vernier will increase acoustic sensor recognition and classification capabilities, while an improved DICASS will provide an enhanced long-range, single sonobuoy firing capability which presently does not exist. \$26.8 million in FY 1983 and \$27.0 million in FY 1984 are requested for this program.

Continuation of the P-3C OMEGA/Inertial Navigation program, \$17.0 million in FY 1983 and \$13.1 million in FY 1984 is also included in the FY 1983 budget request. This program will procure the LTN-72, a sophisticated, highly reliable navigation system which operates independently of ground-based navigation aids and will replace the obsolete and unsupportable ASN-84. Additionally, the LTN-211 OMEGA system will be procured.

The Integrated Acoustic Communication System (IACS) Low Data Rate Aircraft System will provide the initial capabilities for the Navy requirement for a tactical acoustic communication system. This Low Data Rate System will enable the aircraft to transmit information requests to sonobuoys and to receive the resultant messages from the sonobuoy. For the final increment of this effort, \$3.7 million is budgeted in FY 1983. The P-3C MAD Integration modification, \$5.4 million in FY 1983 and \$11.7 million in FY 1984 will enhance and in some cases procure the ASQ-81 system. Other continuing programs include the PARKHILL KY-75, \$1.3 million in FY 1983 and \$2.9 million in FY 1984, which will provide secure voice communications and the Special Project Aircraft effort, \$4.6 million in FY 1983 and \$3.9 million in FY 1984.

Four new start programs are included in the FY 1983 budget request. The ALR-66 ESM (Electronic Sensor Monitoring) system is a state-of-the-art replacement for the ALD-2B which is obsolete and lacks the required sensitivity, frequency coverage and bearing accuracy for threat warning. Planned procurement of this system requires \$7.4 million in FY 1983 and \$10.1 million in FY 1984. To enhance target localization capability, \$2.7 million in FY 1983 and \$5.0 million in FY 1984 are requested for the Doppler Track System. Finally, \$.8 million in FY 1983 and \$.2 million in FY 1984 are requested for the On-Top Position Indicator replacement and \$.1 million and \$.1 million in FY 1983 and FY 1984, respectively, are requested for Ditching Improvements.

#### EP-3 Series Modification

\$28.2 million in FY 1983 and \$21.2 million in FY 1984 are budgeted for EP-3 modifications. Included in these totals is \$19.9 million in FY 1983 for the EP-3E/B SLEP/CILOP. This modification will continue the SLEP inspection program for ten EP-3E aircraft to extend their service life beyond the projected service life expiration in 1984. The CILOP will procure, install, and integrate a number of devices, including an airborne ESM data analysis system, an Automated Radar Pattern Recognition subsystem, and High Resolution Multi-Purpose Displays. The final increment of this effort, \$12.0 million, is budgeted in FY 1984. Also included in the FY 1983 request is the EP-3E/B Sensor Update which will modify four P-3A aircraft to baseline EP-3 configuration/capability. A two year effort, \$8.3 million in FY 1983 and \$9.2 million in FY 1984 are requested.

#### S-3 Series Modification

Modifications to the S-3 series aircraft require \$27.2 million in FY 1983 and \$31.4 million in FY 1984. The last increment of the Flight Control System, \$10.6 million in FY 1983 is included in the total. Initiated to correct several deficiencies that adversely impact aircraft mission capability and safety, the modification will provide increased elevator authority in the landing configuration, decreased elevator authority in high speed tactical flight, and adequate control authority after loss of both hydraulic systems.

To reduce maintenance actions and operational problems, \$8.8 million in FY 1983 and \$8.2 million in FY 1984 are requested for FLIR Reliability Improvements. Through improvements to the cryogenic system and detector, this program will eliminate the current need for exotic gases (i.e., helium) and PGSE now required at the squadron level for periodic maintenance.

Continuing programs in FY 1983 include: the Carbon Brake program which will replace highly toxic beryllium brake component with similar ones made of carbon, \$1.0 million in FY 1983 and \$1.2 million in FY 1984; the AN/ALR-47 Antenna change, \$.8 million in FY 1983 and \$.9 million in FY 1984; the PARKHILL KY-75, \$.1 million in FY 1983 and \$.1 million in FY 1984; and the Bleed Air Shutoff Valve, \$.1 million and \$.1 million in FY 1983 and FY 1984, respectively.

The major new starts in FY 1983 include the Display Generator Unit, \$2.2 million in FY 1983, and the Start Valve modification, \$1.9 million in FY 1983. Both of these one year efforts will substantially improve reliability and maintainability. A variety of small modifications with a similar reliability goal total \$1.7 million in FY 1983 and \$1.6 million in FY 1984.

Authorization in FY 1984 is requested for the ARC-182 Radio, \$2.5 million, which will provide VHF and UHF secureable voice communications. Additionally, \$13.3 million is requested for the Auxiliary Power Unit which will, through the increase in electrical power it provides, prevent damage to the avionics equipment from overheating when being operated on the ground and will totally compensate for the engine driven generator in the event of generator failure. Finally, \$3.7 million in FY 1984 is requested for the ICS Communication Control modification.

#### US-3A Series Modification

A variety of small modifications totalling \$2.7 million in FY 1983 and \$.1 million in FY 1984 are budgeted for US-3 modifications. Largest among them is the Flight Control program, \$2.5 million in FY 1983, which will correct deficiencies in the aircraft that adversely impact aircraft mission capability and safety. The remaining programs in FY 1983, budgeted at \$.2 million in FY 1983 and the programs included in FY 1984 (\$.1 million) are all of a reliability and maintainability nature.

#### E-2 Series Modification

\$48.1 in FY 1983 and \$69.9 million in FY 1984 are requested for E-2 modifications. The TRAC-A Weapon Improvement program, for which \$36.1 million in FY 1983 and \$50.4 million in FY 1984 are budgeted, will procure a new radar antenna and associated interfacing hardware to allow the E-2C to keep pace with the jammer threat. Changes in the nature of the threat since the Passive Detection System (PDS) ALR-59 was designed, and Fleet experience with the operator workload for the present configuration, require increasing the capability of the memory and adding additional functions. For this effort, \$8.0 million and \$11.3 million in FY 1983 and FY 1984, respectively, are requested. To provide the additional power required for safe climb-out in the event of a single engine failure during takeoff/catapult, \$3.1 million in FY 1983 and \$2.5 million in FY 1984 are requested for the T56-A-425 Engine Water Injection modification. Finally, \$.3 million in FY 1983 and \$.4 million in FY 1984 are requested to continue the Pylon Fixed Pairing replacement, and \$.6 million in FY 1983 and \$.3 million in FY 1984 are requested for the PARKHILL (KY-75) Secure Voice initiative.

Four programs in FY 1984 requiring authorization are the AN/ARC-182 Radio (\$3.4 million); continuation of the Refractometer effort (\$.8 million); the Door Jettison program (\$.5 million); and the Safety mods program (\$.3 million).

#### T-2 Series Modification

A safety of flight modification for T-2C aircraft, High Intensity Anti-Collision Strobe Lights, is included in the FY 1983 budget request and FY 1984 authorization request at a cost of \$.1 million and \$.5 million, respectively.

#### T-34 Series Modification

Several small modifications are budgeted for T-34 series aircraft in FY 1983 and FY 1984. FAA Configuration Changes (\$.2 million in FY 1983) are incorporated to assure a safe and reliable training aircraft. The last increment of the Fire Extinguisher System (\$.3 million in FY 1983) is included in the FY 1983 budget request. Finally, two new starts, the Emergency Manual Fuel Control program, incorporation of which will provide a backup for the automatic fuel system in the event of malfunction (\$.5 million in FY 1983 and \$.3 million in FY 1984), and the Improved Landing Gear Actuation System (\$.5 million in FY 1983 and \$.5 in FY 1984, respectively) are included. The total T-34 series modification request is \$1.5 million in FY 1983 and \$.8 million in FY 1984.

#### T-44 Series Modification

\$ .2 million in FY 1983 and \$ .2 million in FY 1984 are requested for T-44 modifications. In FY 1983, \$ .1 million is requested for the Wing Bolts change and \$ .1 million is budgeted for the Cockpit Illumination program. Only one program is included in FY 1984: the FAA Certification effort.

#### T-39 Series Modification

Safety and reliability improvements comprise the T-39 series FY 1983 budget request (\$1.5 million) and FY 1984 authorization request (\$2.7 million). \$1.0 million in FY 1983 and \$1.9 million in FY 1984 are associated with the omnibus Configuration Update which will incorporate FAA recommended changes. In a similar vein, \$ .3 million and \$ .6 million in FY 1983 and FY 1984, respectively, are included for Service Bulletin incorporation that is required to ensure baseline configuration commonality. High Intensity Anti-Collision Strobe Lights are a safety necessity for which \$ .1 million in FY 1983 and \$ .2 million in FY 1984 are requested. Last but not least, \$ .1 million is requested in FY 1983 for Brake Reliability and Maintainability Improvements.

#### TH-57 Series Modification

\$ .3 million in FY 1983 and \$ .3 million in FY 1984 are requested for the Service Bulletin effort to ensure safety and supportability.

#### C-9 Series Modification

In order to incorporate outstanding FAA service bulletins and correct a wide variety of deficiencies reported by C-9 operators, \$1.4 million and \$3.0 million are requested in FY 1983 and FY 1984, respectively.

#### C-1 Series Modification

\$ .2 million in FY 1983 is requested to complete the Nacelle/Wheel Well Rewiring modification. Replacement of deteriorated electrical wiring is necessary in order to preclude numerous electrical problems affecting safety and reliability.

#### UC-12 Series Modification

Prevention of wing attachment bolt failure dictates the replacement of existing bolts with ones manufactured of a material resistant to stress corrosion cracking. A significant savings in maintenance can be achieved through this program for only \$ .1 million in FY 1983. Also, \$ .1 million in FY 1983 and \$ .3 million in FY 1984 are budgeted for FAA certification updates.

#### C-131 Series Modification

\$1 million in FY 1983 and \$1 million in FY 1984 are requested to fund safety and reliability changes to the ancient C-131 series aircraft.

#### C-130/KC-130 Series Modification

In the FY 1983 budget request and FY 1984 authorization request, \$16.2 million and \$17.2 million, respectively, are budgeted for C-130/KC-130 aircraft. Of the total program requested, \$7.2 million in FY 1983 and \$8.1 million in FY 1984 are requested for continuation of the KC-130 SLEP (Service Life Extension Program). Designed to increase the service life of this aircraft by 10,000 flight hours, the program includes replacement of the outer wings and center wing engine truss mounts, rewiring of known fatigue sensitive areas such as portions of the fuselage, modification of the main landing gear area, and updating the UHF radio equipment.

The AN/APN-59E, a solid state weather radar used as a navigation aid and for severe weather avoidance, is a direct replacement for the existing AN/APN-59B radar which is becoming increasingly unsupportable. To procure this system, \$4.2 million in FY 1983 and \$2.9 million in FY 1984 are requested. Additionally, \$2.6 million in FY 1983 and \$4.2 million in FY 1984 are requested for the Long Range Navigation System. Procurement of the LTN-72 Inertial Navigation System, LTN-211 OMEGA and True Airspeed System will provide the modern, reliable navigation system required if the C/KC-130 aircraft are to have a global all-weather mission capability. \$1.2 million in FY 1983 and \$.8 million in FY 1984 are budgeted for the Fuel Quantity System reliability and maintainability improvement; \$.9 million and \$1.2 million in FY 1983 and FY 1984, respectively, are included for the ARC-190 Radio; and \$.1 million in FY 1983 is requested for the Bleed Air Pressure change.

#### EC-130 Series Modification

Budget authority of \$62.7 million in FY 1983 and authorization of \$23.9 million in FY 1984 are requested for EC-130 series modifications. The HF/UHF Secure Voice program will provide TACAMO flight deck personnel with direct access to UHF secure voice communications through the incorporation of the TSEC/KY-58 (VINSON). Additionally, the program will procure the ARC-191 HF transceiver and receiver to replace the current ARC-132 which has a poor record of reliability and, because it is no longer in production, is prohibitively expensive to support. Costs of this modification are \$6.3 million in FY 1983 and \$4.7 million in FY 1984. The final increment of the EC-130 Service Life Extension Program (SLEP) is included as well and \$3.9 million in FY 1983 is requested.

\$8.5 million in FY 1983 and \$3.2 million in FY 1984 are requested for the Mission Avionics modification. Goals of this program include expansion of the present capabilities of the EC-130 avionics in accordance with the Minimum Essential Emergency Communication Network (MEECN) Master Plan and improved reliability and maintainability. In accordance with the Joint Chiefs of Staff requirement for nuclear hardening in TACAMO aircraft, \$17.6 million in FY 1983 and \$5.8 million in FY 1984 are requested for the Electro-Magnetic Pulse (EMP) Layer I program. The program consists of devices designed to improve the electromagnetic shielding of the fuselage as well as general filtering throughout the aircraft. A follow-on effort, EMP Layer II/III, is also included in the FY 1983 budget (\$16.4 million in FY 1983 and \$5.0 million in FY 1984) which consists of shielding electrical wiring and introducing filters and voltage limiters.

EC-130 Series Modification cont'd

A number of new starts are included in the FY 1983 request. Significant improvement in capability and reliability is expected following the procurement of a Solid State Teletypewriter (\$1.4 million in FY 1983 and \$.3 million in FY 1984). \$1.0 million in FY 1983 and \$2.6 million are requested for Survivable Time Standard equipment. Other new starts include: \$.9 million in FY 1983 and \$.1 million in FY 1984 for the Communications Central Emergency Rocket Communication System (ERCS) Monitor; \$.5 million and \$.1 million in FY 1983 and FY 1984, respectively, for the LTI-211 OMEGA Navigation System; \$1.0 million in FY 1983 and \$.1 million in FY 1984 for the AN/APX-100 IFF transponder; \$.9 million in FY 1983 and \$.2 million in FY 1984 for the AN/APN-59E Weather Radar; \$.9 million in FY 1983 and \$.2 million in FY 1984 for the Magnetic Tape Loader; \$.5 million and \$.1 million in FY 1983 and FY 1984, respectively, for the AN/ARN-118 TACAN; \$.2 million in FY 1983 and \$.1 million in FY 1984 for the Short Trailing Wire Antenna; and \$2.1 million in FY 1983 for the Narrow Band Encryption change. Finally, authorization is requested for the Multiple Satellite Access modification for which \$1.4 million in FY 1984, is budgeted.

FEWSG Series Modification

The ability to accurately simulate the known and postulated EW characteristics and tactics of different threats is a primary mission element of the Fleet Electronic Warfare Support Group (FEWSG) and its assigned aircraft and equipments. In keeping with this program, a series of jammers capable of increased jamming power and a wide range of frequency and modulation control modes is being procured to support the effort. Of the \$36.8 million in FY 1983 and \$15.7 million in FY 1984 budgeted for FEWSG modifications, \$34.1 million and \$10.2 million in FY 1983 and FY 1984, respectively, are requested for various jammer programs. What follows is a breakdown of budgeted jammer procurement and related cost for the ERA-3B aircraft: A/B Band Jammers, \$5.7 million in FY 1983; C/D Band Jammers \$4.7 million in FY 1983; E/F Band Jammers, \$5.2 million in FY 1983; G/H Band Jammers, \$4.9 million in FY 1983; and I/J Band Jammers, \$4.3 million in FY 1983. Additionally, \$3.9 million and \$5.4 million for E/F/G/H and I/J Band Jammers, respectively, for incorporation into NKC-135 aircraft are also included in FY 1983. One follow-on Jammer program, the I/J Band Jammer for the ERA-3B, is budgeted in FY 1984 (\$10.2 million). \$.1 million in FY 1983 is requested to complete the RA-3 to ERA-3B FEWSG Conversion.

Three non-jammer new start programs are included in the FY 1983 budget request. \$1.1 million in FY 1983 and \$2.4 million in FY 1984 are requested for the ERA-3B FSM Receiver System which will facilitate long range detection, direction finding, signal identification and accurate frequency set-on of the FEWSG Airborne Jammer System in support of the FEWSG mission. The EA-6A ALQ-170 Generic Simulator is a new missile seeker simulator for which \$.8 million in FY 1983 and \$.3 million in FY 1984 are budgeted. To greatly contribute to navigational capability, particularly during jamming operations, \$.7 million in FY 1983 and \$.8 million in FY 1984 are requested for the LTN-72R Inertial Navigation System. Finally, authorization in FY 1984 is requested for the EA-6A AN/ARC-153 Radio, \$2.0 million.

#### Various Modifications

Two various modifications are budgeted in FY 1983. \$7.8 million in FY 1983 is requested for the Sea Water Actuated Release System (SEAWARS). A safety modification, the SEAWARS provides automatic parachute release upon immersion in sea water to preclude aircrew drownings through parachute entanglement and water dragging. A follow-on procurement in FY 1984 is also planned and \$6.1 million is budgeted. To greatly improve reliability and maintainability of the AERO-7A/B Racks, \$3.0 million in FY 1983 and \$1.9 million in FY 1984 are budgeted for changes to the present racks which will increase safety and decrease maintenance. Authorization in FY 1984 is requested for ASW Pods for Tactical Aircraft (\$2.8 million). This modification will enable carrier Commanders to augment ASW aircraft assets with tactical aircraft when pod-equipped.

#### Power Plant Changes

This modification program funds procurement of kits for incorporation of a large number of primarily small dollar value power plant changes into the appropriate engine population. For this purpose, \$11.7 million in FY 1983 and \$14.8 million in FY 1984 are requested.

#### Miscellaneous Flight Safety and Operational Necessity Changes

The FY 1983 budget request and FY 1984 authorization request includes \$5.4 million and \$6.3 million, respectively, for safety related modifications. This program provides for the procurement of kits to correct flight safety and operational mission capability deficiencies which are revealed during actual operation of aircraft in the fleet under diverse tactical and environmental conditions.

#### Common ECM Equipment

A total of \$153.8 million in FY 1983 and \$142.6 million in FY 1984 are requested for Common ECM equipment. The largest of the two efforts budgeted, the AN/ALQ-126B, consists of an updated ALQ-126A with improved reliability and performance against prevailing threat emitters. \$143.9 million in FY 1983 and \$128.2 million in FY 1984 are requested for this vital program.

The ALR-45 modification funds the retrofit of the CP-129/ALR-67 computer/countermeasures and the IP-1276/ALR-67 azimuth display which have been re-designated the AN/ALR-45F(V). At a cost of \$9.9 million and \$14.4 million in FY 1983 and FY 1984 respectively, the AN/ALR-45F will provide a software reprogrammable analyzer, an alpha-numeric display of threat bearing, an I.D. and threat data hand-off capability for the AN/ALQ-126 and AN/ALE-39.



#### Common Avionics Changes

\$8.1 million in FY 1983 and \$13.2 million in FY 1984 are requested for miscellaneous minor avionics changes which can be readily identified and incorporated at the intermediate or organizational maintenance levels. Of the total request, \$1.5 million and \$1.1 million in FY 1983 and FY 1984, respectively, are requested for the APN-154 Radar Beacon Improvement program. Essentially a reliability and maintainability effort, the redesigned frequency control portion will reduce scheduled maintenance by a factor of 6 to 1. To improve resistance to the jamming threat, modifications to the AN/APX-76 IFF Interrogator are required and \$1.3 million in FY 1983 and \$1.5 million in FY 1984 are requested for this purpose. \$.6 million in FY 1983 and \$1.0 million in FY 1984 are requested to improve the reliability and maintainability of the AN/ASN-50. The AN/APN-171 radar altimeter set is a safety-of-flight essential airborne low-altitude terrain tracking and altitude sensing radar system which provides accurate, continuous indication of aircraft altitude and which is in need of reliability and maintainability improvements. In order to accomplish this change, \$.3 million in FY 1983 and \$1.9 million in FY 1984 are requested. \$.3 million in FY 1983 and \$1.8 million in FY 1984 are requested for the ASN-92 Inertial Navigation improvement and \$1.3 million in FY 1983 and \$.8 million in FY 1984 are requested for the TSEC/KY-78. Authorization is requested in FY 1984 for the Digital Air Data Converter procurement for which \$2.0 million is budgeted. Finally, a large array of small modifications are budgeted in FY 1983 and FY 1984 totalling \$2.8 million and \$3.1 million, respectively.

Budget Activity 6: Aircraft Spares and Repair Parts

(\$ in Thousands)

FY 1984 Estimate - \$2,487,100  
FY 1983 Estimate - \$2,080,900  
FY 1982 Estimate - \$1,541,200  
FY 1981 Actual - \$1,095,901

Purpose and Scope of Work

Budget Activity 6 of the APN appropriation funds the procurement of the spare equipment and repair parts necessary to support Navy and Marine Corps aircraft procurement and operating programs. The budgeted funds provide for: (1) initial outfitting and pipeline quantities of reparable spares and repair parts for new and modified aircraft; (2) procurement of reparable spare equipments and repair parts to replenish inventories supporting the operating and flying-hour program for aircraft already in the Fleet.

Justification of Funds

The FY 1983 budget request for aircraft spares and repair parts is \$539.7 million higher than the amount funded in FY 1982 for the same purpose. The increased request reflects the Navy's continuing concern with the impact of support shortages on overall Fleet readiness as well as the impact of escalation. The increase in initial spares is primarily attributable to increased quantities of engines and spares support for the AV-8B and SH-60B aircraft, reflecting their phased introduction to the Fleet. The replenishment spares portion of the FY 1983 budget is being maintained at a high level of funding in order to improve readiness. The following table depicts the FY 1981 through FY 1984 funding profile for the spares account:

(\$ in Millions)	FY 1981	FY 1982	FY 1983	FY 1984
Initial Spares and Repair Parts	\$ 465.2	\$ 752.5	\$ 932.0	\$ 918.3
Replenishment Spares and Repair Parts	630.7	788.7	1,148.9	1,568.8
Total Aircraft Spares and Repair Parts	\$1,095.9	\$1,541.2	\$2,080.9	\$2,487.1

INITIAL SPARES:

Initial spare requirements reflect the number, type and deployment of aircraft being procured and entering the operating program. The only items being procured under the initial spares category are engines and spares for those equipments and parts which have been recently introduced and therefore have no adequate demand history. Funding requirements for engines and for those items of major avionics equipment and other equipments with a significant unit cost qualifying as initial spares are calculated on an item-by-item basis where possible, considering usage data, failure rates, and engineering estimates based on predicted usage for new items as applicable. Requirements for other initial spares and spare parts are determined on a statistical basis, using the same methodology used in calculating major spare equipment requirements.

The following table shows FY 1983 and FY 1984 Initial Spares and Repair Parts support requirements by aircraft model:

Aircraft Model	FY 1983						FY 1984					
	Aircraft Quantity	Spare Engines	Contractor Spares	Navy Spares	PGSE Spares	Total Initial Spares	Aircraft Quantity	Spare Engines	Contractor Spares	Navy Spares	PGSE Spares	Total Initial Spares
A-6E	8	9.1	-	5.7	.8	15.6	8	5.2	-	8.3	5.1	18.6
EA-6B	6	18.4	.6	9.2	2.3	30.5	6	18.9	1.0	10.7	4.4	35.0
AV-8B	18	112.6	58.0	15.6	5.6	191.9	30	72.8	8.0	10.8	6.1	97.7
F-14A	24	47.8	-	9.8	3.2	60.9	30	54.6	-	12.0	1.3	67.9
F-18	84	50.3	-	55.9	13.5	119.8	96	66.4	-	58.2	13.0	137.6
CH-53E	11	7.9	2.2	10.9	.9	21.9	11	11.1	-	11.5	.4	23.0
AH-1T	-	-	-	-	-	-	22	6.0	4.5	7.0	.4	17.9
SH-60B	48	18.1	144.2	70.9	3.0	236.2	64	12.9	95.0	147.1	13.1	268.1
P-3C	6	3.3	1.3	4.0	3.7	12.4	5	3.3	-	1.8	.8	5.9
E-2C	6	-	3.8	6.2	5.2	15.2	6	-	1.1	6.7	5.8	13.6
SH-2F	18	-	-	15.7	-	15.7	18	-	-	11.8	2.3	14.1
C-9	-	-	-	-	-	-	2	-	4.3	-	-	4.3
C-2	8	-	17.1	-	-	17.1	8	3.8	12.9	1.2	-	17.9
F-5E	-	-	-	-	-	-	4	-	4.6	-	-	4.6
CGSE Repair Parts <sup>1/</sup>					10.4	10.4					19.8	19.8
Training Device Pts				37.1		37.1				40.9		40.9
Modification Spares						147.4						131.4
TOTAL		267.6	227.3	241.0	48.7	932.0		255.0	131.4	328.0	72.5	918.3

Totals may not add due to rounding.

<sup>1/</sup> Supports equipment procured in B.A. 7.

Initial spares and repair parts for support of new aircraft are categorized as follows:

(1) Government Furnished Spare Aircraft Engines - (FY 1983 - \$267.6 million; FY 1984 - \$255.0 million).

Spare aircraft engine requirements are calculated on an actuarial basis to support the aircraft operating program with a confidence level of 80% to 90% that a spare engine will be on site and ready for issue when required by combat aircraft. Requirements are determined by developing a flying hour program for each type/model aircraft and applying against it engine repair and removal rates to determine total engine procurements. On hand and on order assets are deducted from this gross requirement to arrive at a net procurement requirement. Requirements are thus established for initial outfitting of shore sites and carriers, to fill maintenance repair/overhaul pipelines, and to provide replacement for installed engines that are not functioning properly or have reached their maximum authorized operating time.

(2) Contractor Spares Support - (FY 1983 - \$227.3 million; FY 1984 - \$131.4 million)

Contractor furnished spares and repair parts are provided for support of new, sophisticated weapons systems or subsystems during their development, test and fleet introductory phases until either the Navy Support Date (NSD) or Material Support Date (MSD) is reached, at which time the Navy supply system assumes responsibility for providing all spares and repair parts. Contractor support is designed to preclude procurement of unnecessary or unstable spare parts before usage data is available or aircraft equipment design is frozen. Requirements are calculated by comparing the new weapon system with historical data for a similar/same aircraft and utilizing the Weapon System Planning Document (WSPD) which provides the site activation schedule.

(3) Navy Spares - (FY 1983 - \$241.0 million; FY 1984 - \$328.0 million)

The Inventory Control Point (Aviation Supply Office) must purchase investment spares and repair parts under its management cognizance to initially outfit shore sites and carriers and pipe-line stock requirements in support of new aircraft, engines, or installed systems. Navy spares support responsibility commences at the beginning of a new program for Government Furnished Equipment and at the Navy Support Date for Contractor Furnished Equipment. The substantial increase in FY 1983 reflects increased phasing of SH-60B and AV-8B requirements.

(4) Peculiar Ground Support Equipment (PGSE) - (FY 1983 - \$48.7 million; FY 1984 - \$72.5 million)

The funding requested here provides for repair parts essential to the support (readiness) of PGSE end items required for the ground testing, servicing, handling and maintenance of specific weapon systems and their sub-systems. These PGSE end items require complete Integrated Logistic Support (ILS), including repair parts, concurrent with delivery in order to adequately support the related weapon systems.

PGSE spares funding requirements are divided into two categories: Initial Outfitting List (IOL) support and augmented support. IOL support is determined by a comparative cost analysis of similar end item demand patterns. Augmented support requirements are determined by the initial quantity of PGSE end items procured, the complexity/cost of the end items, the number of sites to be supported, the proximity/inter-support relationship of shore-based sites, and the period of time between equipment introduction and material support date.

(5) Modification Spares - (FY 1983 - \$147.4 million; FY 1984 - \$131.4 million)

The investment program also includes procurement of initial reparable spares and repair parts to support modification programs financed under APN Budget Activity 5. Requirements include new procurement and/or the modification of spares and repair parts already in the inventory. Requirements are based on the corresponding elements being procured for the aircraft modification program.

REPLENISHMENT SPARES:

Total funding requested for all replenishment spares programs is \$1,148.9 million in FY 1983 and \$1,568.8 million in FY 1984. Most of the requirements for replenishment spares for reparable items are budgeted and procured through the Aviation Supply Office, which is the inventory control point (ICP) for aircraft systems and component parts. The rest of the requirements for replenishment spares are procured at the Naval Air Systems Command Headquarters.

The replenishment spares element of the budget funds the procurement of reparable components in support of all Naval Aviation spares requirements subsequent to the end of the initial support period which extends from the date of Preliminary Operational Capability (POC) to a point in time, not in excess of 18 months, when requirements are forecast entirely upon actual demands. The replenishment spares element of the budget is made up of:

(a) The basic replenishment portion which provides for the procurement of spare reparable components to replace components lost through attrition and to establish levels of material to support projected demands for the material.

(b) Follow-on outfittings which are required to provide the spare component support necessitated by aircraft site outfitting subsequent to the demand development period.

The following table displays the funding breakdown for the above replenishment spares programs:

(\$ in Millions)	FY 1983	FY 1984
Inventory Control Point Support	\$1,122.7	\$1,549.9
Interservice Support	9.4	9.7
Executive Mission Helicopters	10.6	6.4
Miscellaneous Headquarters	6.2	2.8
TOTAL REPLENISHMENT SPARES	\$1,148.9	\$1,568.8

The replenishment spares are categorized as follows:

(1) Inventory Control Point (ICP) Support - (FY 1983 - \$1,122.7 million; FY 1984 - \$1,549.9 million)

Spare reparable components are managed by the Aviation Supply Office, which has been assigned program support responsibility for specific aircraft/weapon systems. Spares requirements are calculated by an individual line item stratification technique which applies projected assets to forecast requirements over a given future support period into the total number of items in the overhaul programs. The Universal Inventory Control Point (UICP) stratification requirements are computed utilizing DOD logistics guidance, Navy program planning data, and technical, procurement, and inventory data maintained by the ICP. Navy program planning data includes total aircraft inventory and siting, the actual and planned flying hour programs affecting aircraft utilization, schedules of aircraft reworks and engine overhauls, and other factors relating to aircraft support. During stratification, these components are evaluated in terms of inventory on hand and on order, demand experience, projected demand, outfitting requirements, and current fleet requests which may not yet have been filled.

(2) Interservice Support (ISS) - (FY 1983 - \$9.4 million; FY 1984 - \$9.7 million)

Funds are required to reimburse the Army and Air Force for reparable material used during both in house (organic) and service administered commercial overhaul work of Navy aircraft engines, airframes and other reparable components. Material requirements are calculated by the Army and Air Force for the Navy's projected overhaul/rework program and are validated through negotiation between the Naval Air Logistics Center and Army/Air Force representatives.

(3) Executive Mission Helicopters (XM) - (FY 1983 - \$10.6 million; FY 1984 - \$6.4 million)

Reparable spare components are required to support the VH-3D and VH-1N Executive Mission aircraft. The Executive Mission provides a transportation evacuation capability for the Chief Executive, Heads of State, as well as other visiting dignitaries. Eleven VH-3D aircraft operate from one primary site and two auxiliary sites. In addition, the helicopters operate for extended periods of time from numerous other locations necessitating selected item pack ups. Material support requirements are calculated based on inputs from the operating squadron, the aircraft contractor and those peculiar requirements set forth by the Executive Branch. Executive Mission helicopters must have 100% spares support for reparable components. These components are procured so that a spare component will be on hand when the component reaches half of its projected service life. In FY 1983 funds are also included for the start up of six VH-1N aircraft, which had been in storage.

(4) Miscellaneous NAVAIR Headquarters Support - (FY 1983 - \$6.2 million; FY 1984 - \$2.8 million)

This includes material support requirements for the Fleet Electronic Warfare Support Group (FEWSG), Project Beartrap, Project Churchplate, VH-3A and C-9/DC-9 aircraft, and production compatibility changes. Spares requirements for FEWSG, Project Beartrap and Project Churchplate are developed by the Naval Avionics Center (NAC) in conjunction with the operational activities, based on past usage and anticipated system changes. VH-3A spares requirements are developed by the Fleet operational squadron and NAVAIR, using historical data to project future material requirements. C-9/DC-9 spares support requirements were developed by the aircraft weapon system manager and by NAVAIR, based on the Navy's past experience operating the C-9 aircraft. Spares requirements to support production compatibility changes were projected by NAVAIR using past historical data and anticipated future compatibility changes.

Budget Activity 7: Aircraft Support Equipment and Facilities

(In Thousands)  
FY 1984 Estimate - \$424,700  
FY 1983 Estimate - 480,000  
FY 1982 Estimate - 328,500  
FY 1981 Actual - 251,354

Purpose and Scope of Work

The FY 1983 budget plan of \$480.0 million and the FY 1984 authorization request of \$424.7 million provide continuing vital effort in four categories which support aircraft procurement programs as follows:

(1) Common Ground Equipment, which provides funds for Automatic Test Equipment (ATE), various aircraft systems trainers and training aids, the Maintenance Information Automated Retrieval Systems (MIARS), the Engineering Data Management Information Control System (EDMICS), and other aircraft ground support equipment including Rapid Deployment Force requirements and mobile maintenance facilities for Marine expeditionary forces.

(2) Aircraft Industrial Facilities, which provides for calibration equipment for Navy standards and calibration laboratories. It also provides for capital improvements, modernization, and maintenance of government-owned, but contractor-operated, aircraft-producing industrial plants.

(3) War Consumables, which provides funds for auxiliary fuel tanks, pylons, and ejector racks and for the modification of aircraft fuel tanks. The new procurement items are of a consumable nature and are related primarily to the number of sorties flown by combat and training aircraft.

(4) Other Production Charges, which provides funds for miscellaneous production support and testing services, aircraft cameras, various equipment for United States Coast Guard aircraft, and aircraft pods supporting tactical aircrew combat training systems.

### Justification of Funds

Funding requirements for FY 1983 and FY 1984 are outlined in the following table:

	(Dollars in Millions)	
	FY 1983	FY 1984
	<u>Funding</u>	<u>Authorization</u>
Common Ground Equipment	\$415.2	\$348.1
Aircraft Industrial Facilities	24.4	30.8
War Consumables	9.3	9.6
Other Production Charges	31.1	36.2
Total B.A. 7	<u>\$480.0</u>	<u>\$424.7</u>

### Common Ground Equipment - FY 1983 \$415.2 million; FY 1984 \$348.1 million

The FY 1983 budget plan for the Common Ground Equipment Program totals \$415.2 million. The FY 1984 authorization request is \$348.1 million. Funding for the various segments of this program is depicted below and described in subsequent paragraphs:

	FY 1983	FY 1984
	<u>Funding</u>	<u>Authorization</u>
(a) Automatic Test Equipment (ATE)	\$134.9	\$ 95.9
(b) Training Equipment	49.8	24.2
(c) Aircraft Common Support Equipment	55.2	56.5
(d) Mobile Maintenance Facilities	12.3	10.1
(e) Inventory Control Point (ICP) Managed GSE	37.4	37.2
(f) Maintenance Information Automated Retrieval Systems (MIARS)	.4	.4
(g) Electronic Warfare Training Complexes (2D2 Device)	4.7	4.9
(h) Gas Turbine Compressor Replacement	31.8	34.1
(i) Avionics Support Equipment	22.4	17.0
(j) Rapid Deployment Force/Maritime Prepositioned Ships	65.5	66.9
(k) Engineering Data Management Information Control System (EDMICS)	.8	.9
Total Common Ground Equipment	<u>\$415.2</u>	<u>\$348.1</u>



#### ATE (Automatic Test Equipment)

The FY 1983 budget request includes \$134.9 million for ATE and the FY 1984 authorization request includes \$95.9 million for ATE. The ATE segment of the Common Ground Equipment budget line item was established to broaden the category of avionics support equipment acquisition formerly limited to VAST (Versatile Avionics Shop Test). The ATE account funds the procurement of the new MINI-VAST and Tailored MINI-VAST, as well as a family of module testers including the Hybrid Tester, the Digital Tester and the Navigation Set Test System to support Inertial Navigation Systems in the Fleet.

The new six-rack VAST-derived MINI-VAST was designed to accommodate the testing requirements of the advanced avionics systems in the F/TF/A-18A aircraft and other planned avionic systems which incorporate the latest electronic design technology. The new five-rack Tailored MINI-VAST will support the avionics systems of the SH-60B LAMPS MK III aircraft. MINI-VAST and Tailored Mini-Vast program objectives are: (1) to provide support as the principal avionics test equipment for F-18, TF-18, A-18 and LAMPS weapons systems; (2) to maximize commonality with the VAST system; (3) to preclude the development and introduction of new special purpose test equipment, and provide a more cost effective, logistically common and technically superior standard testing system; (4) to reduce the number of avionics technicians required in the avionics shop; and (5) to reduce shipboard avionics support spare requirements. The FY 1983 Budget request will fund the acquisition of ten MINI-VAST and six Tailored MINI-VAST systems stations.

The ATE sub-line item also funds the acquisition of module testers. This procurement satisfies the requirement for smaller, less expensive automatic test equipment to supplement VAST and MINI-VAST. These module testers will provide fault detection and isolation capability to maintain SRAs (Shop Replaceable Assemblies) in existing avionics facilities and to support F/TF/A-18 and LAMPS simple WRAs (Weapons Replaceable Assemblies).

#### Training Equipment

The FY 1983 budget request is \$49.3 million and the FY 1984 authorization request is \$24.2 million. The Training Equipment sub-line item provides funds for acquisition of trainers, training equipment, training parts, GFE/GSE for training purposes, and modifications/changes relating to the above acquisitions. The procurements funded within the Training Equipment sub-line item are limited to: (1) training devices and equipment and related modifications for generalized training programs which provide skills common to more than one weapon system, (2) trainers for out-of-production aircraft, and (3) GFE in support of courses at the Navy Formal Schools. Training on out-of-production aircraft is dependent upon these funds for all acquisitions, specific trainer-peculiar changes, modification/modernization, user-generated changes and replacement. The Training Equipment sub-line item is broken into two major categories, General Training Equipment and Modification/Modernization of Trainers. The following tables display funding profiles within the Training Equipment sub-line item:

General Training Equipment

	(In Thousands)	
	<u>FY 1983</u>	<u>FY 1984</u>
Area II Minor Aids and Devices	\$ 1,815	\$ 1,796
Area III General Trainers	11,740	7,008
Air Combat Maneuvering Trainer	3,526	1,662
Laser Air-to-Air Gunnery Simulator (LATAGS)	110	79
Hostile Air Defense Simulation System (HADSS)	1,179	897
Total General Training Equipment	\$18,370	\$11,442

Modification/Modernization of trainers requirements, including GFE for out-of-production weapon systems

<u>Program</u>	(In Thousands)	
	<u>FY 1983</u>	<u>FY 1984</u>
TA-4J	\$ 209	\$ 273
AV-8A	907	359
A-7	8,288	1,927
F-4	783	749
C-130	-	279
T-2C	-	224
S-3A	3,506	2,607
E-2B	35	153
H-1	9,819	629
H-3	2,676	897
H-46	454	1,975
H-53	454	269
Govt. Furnished Equipment for Formal Schools	1,361	1,166
ATTS	1,053	-

	<u>FY 1983</u>	<u>FY 1984</u>
A-3	437	217
A-4	104	163
T-44A	-	224
OV-10A	271	89
EA6A	1,043	558
Total Modification/Modernization	<u>\$31,400</u>	<u>\$12,758</u>

Aircraft Common Support Equipment

The Aircraft Common Support Equipment (SE) element under the Common Ground Equipment line item provides for the initial outfitting of Common Support Equipment under NAVAIR inventory and technical management. These SE end items are required for ground testing, servicing, handling, and maintenance of aircraft and their systems. SE items acquired under this budget line item include engine propulsion test systems, mobile air conditioners and generators, and miscellaneous support items such as armament-handling equipment and aircraft salvage/firefighting equipment.

A comprehensive acquisition plan has been developed for each FY 1983 SE requirement item to ensure that the equipment is ready for procurement by the budget year; to determine the type of procurement action to be initiated; and to initiate a realistic plan for satisfying the fleet requirement for SE end items.

The equipments to be procured are determined through one of the following processes:

1. The direct result of the SE RDT&E Program (these are equipments required to support advanced aircraft systems developments).
2. Reprourement of current SE required to respond to deficiencies.
3. Improved versions of current SE required to support expanded airborne equipment capabilities or advanced airborne equipment developments (e.g., Mobile Electric Power Plant).
4. Major modifications of existing equipments (e.g., Engine Test Stand Update).
5. Equipment developed to improve the capability of the Fleet and/or to improve safety.

To fill the minimum acceptable level of established requirements, budget authority for \$55.2 million in FY 1983 and authorization for \$56.5 million in FY 1984 is requested.

#### Mobile Maintenance Facilities

Budget authority of \$12.3 million in FY 1983 and authorization for \$10.1 million in FY 1984 for Mobile Maintenance Facilities are requested. This program provides for the acquisition of Mobile Facilities and related equipment to support Marine Corps Expeditionary Force aircraft and weapon system maintenance operations. The concept is to provide rapid-response mobility by the use of relocatable maintenance shelters. Execution of the Marine Corps Aviation mission is dependent on a highly mobile and functionally independent aircraft maintenance support capability.

The basic equipments procured under this sub-line item are the container (VAN), air conditioner, 60-Hertz electric generator, running gear and static converter 60 Hz to 500 Hz.

#### ICP Managed SE

ICP Managed SE funds the procurement of end items of Peculiar Support Equipment (PSE) for out-of-production aircraft and systems, and Common Support Equipment (CSE). These end items of SE are under the budget, procurement, and inventory control of the Aviation Supply Office (ASO), Philadelphia, and the Ships Parts Control Center (SPCC), Mechanicsburg, PA. CSE end items are normally introduced into the Fleet thru NAVAIR development and initial procurement. The items are turned over to ASO or SPCC inventory management as an Inventory Control Point (ICP) item after the production specification and procurement package has been stabilized. Most PSE items are assigned to ASO management from the outset. These items are associated with a weapon system and are recommended by the aircraft or airborne system contractor, reviewed and approved by the Navy, and assigned to ASO for procurement and inventory management.

The budget requirements for this element are generated as follows:

- a. New CSE required for site outfittings incident to employment of new weapon systems or equipments.
- b. Replacement CSE resulting from wear-out and attrition
- c. Increased quantities of CSE required for allowance augmentation.
- d. Increased quantities of CSE, quantities for out-of-production aircraft and systems required due to dispersion changes in base-loading beyond original planning or changes in maintenance policy.
- e. Replacement PSE due to attrition.

These SE end items are "principal" items managed by the ICPs with no demand or usage criteria, and require more selective management attention than do the ICP secondary items (spare and repair parts). Sample SE end items procured under this sub-line item include aircraft jacks, aircraft tow bars, hoisting slings, armament handling equipment and maintenance platforms. This program funds the acquisition of some 6000 individual models of CSE and PSE with an inventory value nearing \$20.0 billion.

To support this program, \$37.4 million in FY 1983 and authorization for \$37.2 million in FY 1984 are requested.

Maintenance Information Automated Retrieval System (MIARS)

The FY 1983 budget request for MIARS is \$.4 million and the FY 1984 authorization request \$.4 million. The MIARS program is designed to meet the objective of converting the existing NAVAIR technical manual inventory from paper to microfilm. The program provides for the progressive conversion to a manageable 16MM microfilm data base, investigates the compatibility of information to insure adequate presentation techniques and data integrity and controls the procurement of specialized update and reading equipment for the enhancement of fault isolation and repair through the use of automated rapid retrieval equipment. The present request will permit continued support of total fleet requirements as identified by a fleet survey.

Engineering Data Management Information Control Systems (EDMICS)

The FY 1983 budget request for EDMICS is \$.8 million and the FY 1984 authorization request \$.9 million.

The object of the Engineering Data Management Information Control System (EDMICS) Program, structured in four phases, is to provide more timely and complete engineering data and drawings to the Naval Air Rework Facilities (NAVAIREWORKFACs) for support of weapons system and component maintenance and overhaul and to the Aviation Supply Office (ASO) for competitive procurement support.

EDMICS Phases I, II and III are in-house efforts at the Naval Air Technical Services Facility (NAVAIRTECHSERVFAC). Programming for Phase III is completed. EDMICS III has the capability of automatically determining if requested drawings are contained in file, of automatically requisitioning those drawings not in file, and, if requested, of providing a complete printout of all lower level drawings associated with the drawings which have been requested. In addition, the capability will exist to produce a list of those drawings which are required but not yet submitted by the contractor.

EDMICS Phase IV, which is funded by this budget subline item, will provide automated retrieval and reproduction of engineering data and drawings. The concept of Phase IV involves the electromechanical handling, manipulation, reproduction and electronic submission of the actual graphic data (microfilm copy of the drawings). At ASO the primary reason for noncompetitive procurement, as reported by auditing agencies, is lack of technical data. This situation can be improved by providing rapid accessibility to the massive data bank. Procurement of the basic hardware system with peripheral equipment will begin in FY 1983 and will provide an initial capacity for storage of 1,500,000 data items of engineering documentation along with the capability for training personnel in the operation of the equipment.

Electronic Warfare Training Complexes

The FY 1983 budget request of \$4.7 million and the FY 1984 authorization request of \$4.9 million will finance the updating of two 2D2 devices, one at the Pinecastle Impact Range in Florida and one at NAS Fallon, Nevada.

The 2D2 device, a complex of RF emitters which simulate Electronic Warfare (EW) threat air defense environments, provides training for attack, fighter and reconnaissance aircrews in employment of EW equipment, tactics and techniques. Continuous modification/update of these ten-year-old devices is required to achieve simulation of current enemy threats and to maintain hardware usability/reliability.

#### Gas Turbine Compressor Replacement

The FY 1983 budget request of \$31.8 million and the FY 1983 authorization request of \$34.1 million will finance the acquisition of new GTC equipments to replace existing mobile/turbine-powered air start units at all Navy/Marine Corps activities. Currently, 60 shorebased activities and 13 carriers must be supported with air start systems. Present units suffer from poor maintainability and reliability. The acquisition of new, more reliable equipment beginning in FY 1983 will enable the Navy to meet its vital support requirements.

#### Avionics Support Equipment

The FY 1983 budget request of \$22.4 million and the FY 1984 authorization request of \$17.0 million will fund four pieces of new support equipment, the Armament Programmable Test Set (APTS), the AN/USM-406(V) Countermeasure Test Set, a state-of-the-art TACAN Test Set, and a new Compass Calibrator Test Set. The APTS is a multi-application, microprocessor-controlled test set for support of Missile Launchers, MERS/TERS, and Bomb Racks (conventional and nuclear). The AN/USM-406(V) is a newly-configured electronic warfare counter-measures test set used in organizational level maintenance support of a variety of EW equipments. The new TACAN Test Sets will replace 20-year old test sets and will enable rapid resolution of weapons replacable assembly ambiguities for all TACAN systems. The new Compass Calibrator Test Sets will employ state-of-the-art microprocessors to automate testing of compass calibrators; this process is currently performed in a largely manual fashion. Test times and manpower requirements will be significantly reduced and accuracies substantially improved.

#### Rapid Deployment Force/Maritime Prepositioned Ships

The FY 1983 budget request of \$65.5 million and the FY 1984 authorization request of \$66.9 million will fund support equipment for the new Rapid Deployment Force. In FY 1983 Common Support Equipment (CSE), Armament-Handling Equipment (AHE), organizational-level Peculiar Support Equipment (PSE) and selected intermediate level PSE will be procured to support 70 fixed-wing aircraft at one site and 52 rotary-wing aircraft at another site. A similar procurement is planned in FY 1984. Available information indicates the support equipment items will be stored on USMC Maritime Prepositioning Ships (MPS) at various locations throughout the world.

Aircraft Industrial Facilities - FY 1983 \$24.4 million; FY 1984 \$30.8 million

The FY 1983 budget request for Aircraft Industrial Facilities is \$24.4 million and the FY 1984 authorization request is \$30.8 million. These funds are required for the following categories of equipment:

	(Dollars in Millions) FY 1983	FY 1984
Calibration Equipment	\$16.8	\$19.5
Contractor Facilities	7.6	11.3
Total Aircraft Industrial Facilities	<u>\$24.4</u>	<u>\$30.8</u>

Calibration Equipment

The calibration program provides the Fleet with a means to ensure that Ground Support Equipment is operational and accurate. Calibration is the process of periodically comparing the performance of items of GSE to that of equipment of higher accuracy called standards and making adjustments to the GSE equipments as required.

Calibration funds are used to procure the initial outfitting of calibration standards and ancillary equipment required to support GSE. Items procured with these funds are used at approximately 100 Fleet "I" level calibration activities, 30 NAVAIR calibration laboratories and annexes, five NAVAIR standards laboratories and the Metrology Engineering Center (MEC).

Standards for "I" level Fleet calibration activities are used to expand capabilities, replace time-worn and obsolete equipment, improve performance, and reduce man-hour efforts. Standards procured for the depot level calibration and standards laboratories are used to automate and improve certain calibration procedures in order to reduce man-hour requirements and to expand calibration capabilities to additional laboratories.

Budget authority of \$16.8 million is requested for FY 1983 and authorization for \$19.5 million in FY 1984 is requested for this program.

Contractor Facilities

The FY 1983 budget request of \$7.6 million for Contractor Facilities and the FY 1984 authorization request of \$11.3 million will provide:

Contractor Facilities (cont'd)

(a) Capital maintenance, modernization, improvements, emergency repairs and fire protection for government-owned, aircraft-producing industrial plants. Facilities management contracts require that the government fund capital maintenance projects as required. These projects apply at Naval Weapons Industrial Reserve Plants (NWIRPs) at Bloomfield, Conn., Columbus, Ohio; Dallas, Texas; Bethpage, New York; and St. Louis, Missouri.

(b) Replacement/restoration and capital maintenance of government-owned production equipment in use on Navy programs. Inefficient equipment is replaced when the contractor is unwilling or unable to fund the project or the projects will reduce end-item costs to the government and improve the industrial readiness posture, or when capital maintenance is required in accordance with contractual obligation. New machine tools procured are peculiar to the aerospace industry, producing complex aerospace parts at reduced costs. The reduced costs permit recovery of the investment in three and one-half years.

(c) Procurement of additional production facilities to support programs for new weapons systems and/or to expand present production capabilities that are not supported by private enterprise.

All of the above must include provisions for compliance with the Occupational Safety and Health Act of 1970, P.L. 91-596, and the Environmental Protection Act as implemented by DOD Instruction 5030.52, 28 April 1972.

War Consumables - FY 1983 \$9.3 million; FY 1984 \$9.6 million

The FY 1983 budget request of \$9.3 million and the FY 1984 authorization request of \$9.6 million provide for procurement of bomb racks, Multiple Ejection Racks/Triple Ejection Racks (MER-TER) adapter kits, external fuel tanks, and fuel tank modifications. The procurement programs for these items will buy increments of inventory objectives which consider such factors as numbers and types of using aircraft, mission of aircraft, attrition and pipeline requirements. The following items are requested:

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
MER/TER Adapter Kits	-	\$1,328	-	\$1,033
MER Racks	83	685	118	1,054
TER Racks	204	915	197	960
300 Gallon Ext. Fuel Tank	212	1,057	237	1,275
D-704 Air Refueling Store Modification		3,904		4,474
External Fuel Tank Fins Modification		961		282
Production/Engineering Support	-	450	-	522
Total		\$9,300		\$9,600



Other Production Charges - FY 1983 \$31.1 million; FY 1984 \$36.2 million

The FY 1983 budget request for Other Production Charges is \$31.1 million. The FY 1984 authorization request is \$36.2 million. These funds will provide the following:

(a) \$15.5 million in FY 1983 and \$16.0 million in FY 1984 for Government-Furnished Equipment (GFE) production support which includes testing services, production data reviews, technical publications, repair of damaged or defective GFE, and procurement of Navy Stock Fund items necessary for Fleet installation of technical directives (i.e., minor modification kits and other hardware changes).

(b) \$3.7 million in FY 1983 and \$7.8 million in FY 1984 for procurement of certain Navy avionics equipment for installation in Coast Guard aircraft.

(c) \$6.9 million in FY 1983 and \$8.2 million in FY 1984 for procurement of reconnaissance and other aerial cameras.

(d) \$5.0 million in FY 1983 funding and \$4.4 million in FY 1984 for Pods for the Tactical Aircrew Combat Training System (TACTS).

COMPARISON OF FY 1982 PROGRAM REQUIREMENTS AS REFLECTED IN FY 1982  
PRESIDENT'S BUDGET WITH FY 1982 PROGRAM REQUIREMENTS SHOWN IN FY 1983 PRESIDENT'S BUDGET

	Total Program Requirements per 1982 Budget	Total Program Requirements per 1983 Budget	Increase (+) or Decrease (-)
Combat Aircraft.....	\$ 4,481,500	\$ 6,094,100	+\$1,612,600
Airlift Aircraft.....	200	37,200	+ 37,000
Trainer Aircraft.....	-	73,700	+ 73,700
Other Aircraft.....	76,500	138,600	+ 62,100
Modification of Aircraft.....	793,500	926,700	+ 133,200
Aircraft Spares and Repair Parts.....	1,269,500	1,541,200	+ 271,700
Aircraft Support Equipment and Facilities.....	339,100	328,500	- 10,600
Reimbursable Program.....	<u>25,000</u>	<u>30,000</u>	+ 5,000
TOTAL FISCAL YEAR PROGRAM.....	\$ 6,985,300	\$ 9,170,000	+\$2,184,700

EXPLANATION BY BUDGET ACTIVITY

Combat Aircraft (+\$ 1,612.6 million)

The changes in this budget activity are principally associated with budget revisions submitted prior to final Congressional action, the details of which follow:

<u>Program</u>	<u>Quantity</u>	<u>Amount</u>
A-6E	+ 8	+\$ 124.5
A-6E Adv. Proc.		+ .1
EA-6B	+ 4	+ 108.3
EA-6B Adv. Proc.		+ 9.6
AV-8J	+12	+ 574.2
AV-8B Adv. Proc.		+ 48.9

<u>Program</u>	<u>Quantity</u>	<u>Amount</u>
F-14A	+ 6	+ 161.9
F-14A Adv. Proc.		+ 63.6
F/A-18	+ 5	+ 147.5
F/A-18 Adv. Proc.		- 5.2
CH-53E	+ 3	+ 57.5
CH-53E Adv. Proc.		- 20.8
SH-60B	+10	+ 97.5
SH-60B Adv. Proc.		+ 21.7
P-3C	+ 6	+ 138.9
P-3C Adv. Proc.		+ 31.3
E-2C	-	- 5.2
E-2C Adv. Proc.		- .4
SH-2F	+18	+ 173.6
SH-2F Adv. Proc.		+ 20.0
	+72	+ \$1,747.5

The Congress made the following adjustments:

<u>Program</u>	<u>Amount</u>
A-6E	-\$ .3
EA-6B	- .1
AV-8B	- .3
AV-8B Adv. Proc.	- 12.0
F-14A	- .5
F-14A Adv. Proc.	+ 21.5
F/A-18	- 2.5
F/A-18 Adv. Proc.	- 47.2
CH-53E	- 30.3
SH-60B	- 27.5
SH-60B Adv. Proc.	- 18.2
P-3C	- 4.3
P-3C Adv. Proc.	- 30.0
SH-2F	- 5.1
	-\$156.8

Additionally, the following increases have been included in a DD 1415 Reprogramming Action to cover higher than anticipated escalation:

<u>Program</u>	<u>Amount</u>
A-6E	+\$ 1.1
EA-6B	+ .9
EA-6B Adv. Proc.	+ .1
AV-8B	+ 2.2
AV-8B Adv. Proc.	+ .1
F-14A	+ 3.5
F-14A Adv. Proc.	+ .7
F/A-18	+ 7.6
F/A-18 Adv. Proc.	+ .8
CH-53E	+ 1.0
SH-60B	+ 2.3
SH-60B Adv. Proc.	+ .5
P-3C	+ 1.5
P-3C Adv. Proc.	+ .2
E-2C	+ .9
E-2C Adv. Proc.	+ .1
SH-2F	+ .6
SH-2F Adv. Proc.	+ .1
	<u>+\$24.2</u>

Other adjustments include a \$2.4 million increase in F/A-18 requirements, a \$.3 million increase in the E-2C program for engine pricing, a \$4.9 million decrease to the SH-2F program associated with anticipated contract savings, and a \$.1 million reduction in the CH-53E program.

Airlift Aircraft (+ \$37.0 million)

The \$37.0 million increase in this budget activity is associated with the inclusion of C-2A advance procurement requirements in the FY 1982 Budget Amendment.

Trainer Aircraft (+ \$73.7 million)

The increase in this budget activity resulted from the inclusion of the FY 1982 Budget Amendment, which added \$53.1 million for the procurement of sixty (60) T-34C trainer aircraft and \$15.7 million for thirty (30) T-57 trainer helicopters, and the reprogramming of \$4.9 million to the TH-57 program to cover the total contract price.

Other Aircraft (+ \$62.1 million)

The increase in this budget activity is primarily attributable to Congressional action which added \$64.0 million for the procurement of four (4) KC-130R aircraft and reduced the EC-130Q program by \$.1 million for contractor services. Additional the FY 1982 Budget Amendment reduced the EC-130Q program by \$1.8 million.

Modification of Aircraft (+ \$133.2 million)

The increase in this budget activity resulted primarily from the FY 1982 Budget Amendment which added \$182.9 million as follows:

<u>Program</u>	<u>Amount</u>
A-3 Series	+\$ 7.4
A-4 Series	+ 10.6
A-6 Series	- 2.5
EA-6 Series	- 1.1
A-7 Series	+ 23.3
AV-8A	- .3
F-4 Series	- 1.0
RF-4 Series	+ 24.5
F-14A	+ 25.2
F/A-18	- .1
H-46 Series	- 1.1
H-53 Series	- .1
H-1 Series	+ 1.6
H-2 Series	- .2
P-3 Series	- 2.3
EP-3 Series	- .2
S-3	+ 11.7
E-2 Series	- .5
C-130 Series	- .3
EC-130 Series	- .9
FEWSG	- .4
Various	+ 19.7
Power Plant Changes	- .2
Common ECM Equipment	+ 70.1
	<u>+\$182.9</u>

Modification of Aircraft (cont'd)

Congressional action deleted \$47.2 million as follows:

<u>Program</u>	<u>Amount</u>
A-4 Series	-\$ 1.2
A-6 Series	- 5.3
A-7 Series	- 3.8
AV-8A	- 1.8
F-4 Series	- 10.5
RF-4 Series	- 1.5
F-14A	- 16.2
H-46 Series	- 5.0
S-3	- 1.6
E-2 Series	- .3
	-\$ 47.2

Other changes include the following increases: \$1.6 million in the A-3 series for additional ERA-3B ALE-41 requirements; \$2.1 million in the A-7 series for increased costs in the A-7E HARM and FLIR (Forward-looking infra-red) programs; \$4.5 million in the AV-8 mod program to fund a rephasing of AV-8A to C CILOP (Conversion-in-lieu-of-procurement) requirements for FY 1981 and pricing adjustments in the OBOGS (Onboard Oxygen Generating System) program; \$1.9 million in the F-4 series for the DAA (Digital Automatic Acquisition) program and other requirements rephased from FY 1981; \$2.0 million in the H-46 series to fund the acceleration of the high priority night vision program and the rephasing of the ARC-182 radio from FY 1981 due to a schedule slippage; \$1.7 million in the H-53 series to fund various changes in requirements; \$.8 million in the H-1 series to fully fund the Sidewinder modification; \$2.1 million in the H-3 series to complete the SH-3H CILOP program; \$1.5 million in the P-3 series to cover the rephasing and increased costs of the Parkhill (KY-75) modification; \$1.5 million in the S-3 mod program to fund increased FLIR reliability and maintainability (R&M) costs; \$3.7 million in the FEWSG mod program to fund the addition of the simulator pods and NKC-135 ESM (Electronic Support Measures) receiver system modifications; \$.2 million in the T-34 mod program for the rephasing of fire extinguisher requirements from FY 1981; \$.2 million in the H-2 series for the avionics improvement program; and \$.1 million each in the RF-4 series, F/A-18, and C-1 mod programs.

The above increases are partially offset by the following decreases: \$20.7 million in the A-4 series due to the deletion of the ejection seat program; \$.7 million in the A-6 series due to the deletion of the self retaining bolts and other requirements; \$1.4 million in the EA-6 series due to the realignment of requirements; \$.9 million in the E-2 series as a result of cancelling the weight reduction program; \$2.4 million in the F-14A mod program was available due to the deletion of the Spoiler Actuator modification; \$.2 million in C-130 series requirements; and \$.3 million in EC-130 series requirements.

Aircraft Spares and Repair Parts (+ \$271.7 million)

The increase in this budget activity is primarily attributable to an additional \$258.1 million included in the FY 1982 Budget Amendment and \$15.1 million added by the Congress. These increases are partially offset by a \$1.5 million reduction in modification spares.

Aircraft Support Equipment and Facilities (- \$10.6 million)

The decrease in this budget activity is primarily a result of the inclusion of the FY 1982 Budget Amendment, the details of which follow:

<u>Program</u>	<u>Amount</u>
Common Ground Equipment	-\$ 6.6
Aircraft Industrial Facilities	- .6
War Consumables	- .1
Other Production Charges	- 1.0
	-\$ 8.3

The Congress made the following adjustments:

<u>Program</u>	<u>Amount</u>
Common Ground Equipment	-\$ .5
Aircraft Industrial Facilities	- 3.0
Other Production Charges	- .2
	-\$ 3.7

Other adjustments include a \$1.1 million decrease in the Common Ground Equipment program as a result of the deletion of MIARS (Maintenance Information Automated Retrieval System) requirements, and a \$2.5 million increase to Other Production Charges to fund the procurement of special support equipment for the H-1 and S-3A.

Reimbursable Program (+ \$ 5.0 million)

The \$5.0 million increase in the reimbursable program reflects an increase in anticipated reimbursable orders as a result of FY 1981 experience.

COMPARISON OF FY 1982 FINANCING AS REFLECTED  
IN FY 1982 BUDGET WITH FY 1982 FINANCING AS  
SHOWN IN FY 1983 BUDGET

(In Thousands of Dollars)

	<u>Financing Per FY 1982 Budget</u>	<u>Financing Per FY 1983 Budget</u>	<u>Increase (+) or Decrease (-)</u>
Program Requirements (Total).....	\$ 6,985,300	\$ 9,170,000	+\$ 2,184,700
Program Requirements (Service account).....	6,960,300	9,140,000	+ 2,179,700
Program Requirements (Reimbursable).....	25,000	30,000	+ 5,000
Less:			
Anticipated Reimbursements.....	25,000	30,000	+ 5,000
Reprogramming from prior year budget plans.....			
Unobligated balance available from prior year to finance new budget plans.....			
Transferred from other accounts.....			
Add:			
Unobligated balance available to finance subsequent year budget plans.....			
Transferred to other accounts.....			
Appropriation.....	\$ 6,960,300	\$ 9,140,000	+ 2,179,700

EXPLANATION OF CHANGES IN FINANCING

(In Thousands of Dollars)

1. The \$2,179,700,000 increase to the service account, in financing available for FY 1982, includes a net increase of \$2,284,200,000 associated with Budget Amendments submitted prior to final Congressional action, a Congressional reduction of \$128,700,000, and a \$24,200,000 DD 1415 Reprogramming Action pending.



COMPARISON OF FY 1981 PROGRAM REQUIREMENTS AS REFLECTED IN FY 1982  
PRESIDENT'S BUDGET WITH FY 1981 PROGRAM REQUIREMENTS SHOWN IN FY 1983 PRESIDENT'S BUDGET

	Total Program Requirements per 1982 Budget	Total Program Requirements per 1983 Budget	Increase (+) or Decrease (-)
Combat Aircraft.....	\$3,934,907	\$4,075,859	+\$140,952
Airlift Aircraft.....	37,460	36,854	- 546
Trainer Aircraft.....	33,600	56,321	+ 22,721
Other Aircraft.....	45,500	44,680	- 820
Modification of Aircraft.....	710,500	693,338	- 17,161
Aircraft Spares and Repair Parts.....	1,109,800	1,095,901	- 13,900
Aircraft Support Equipment and Facilities.....	239,000	251,354	+ 12,354
Reimbursable Program.....	<u>25,000</u>	<u>31,503</u>	<u>+ 6,503</u>
TOTAL FISCAL YEAR PROGRAM.....	\$6,135,707	\$6,285,810	+\$ 150,103

EXPLANATION BY BUDGET ACTIVITY

Combat Aircraft (+\$141.0 million)

The changes in this budget activity resulted primarily from the inclusion of the FY 1981 Supplemental Appropriation Act, Public Law 97-12, the details of which follow:

<u>Program</u>	<u>Amount</u>
A-6E	+\$ 18.8
A-6E Adv. Proc.	- .2
EA-6B	- 2.7
EA-6B Adv. Proc.	- .2
A-7E	- .1

Combat Aircraft (cont'd)

<u>Program</u>	<u>Amount</u>
F-14A	+ 18.7
F-14A Adv. Proc.	- 2.1
F/A-18	+ 96.0
F/A-18 Adv. Proc.	- 1.7
CH-53E	+ 26.5
SH-60B Adv. Proc.	- 1.5
P-3C	- 3.7
P-3C Adv. Proc.	- .7
E-2C	- 3.1
E-2C Adv. Proc.	- .3
AV-8B Adv. Proc.	- 1.3
SH-2F Adv. Proc.	- .3
	<u>+\$142.1</u>

Other adjustments include the addition of \$1.9 million for CH-53E advance procurement requirements, a \$.8 million increase to the E-2C for the structural assessment of an engineering change proposal (ECP) to the microwave refractometers, a \$.5 million increase to the E-2C advance procurement account to fund long lead time requirements for the AYK-14 onboard computer, a \$.3 million increase for A-7E peculiar ground support equipment requirements, and a \$4.6 million decrease to the F/A-18 program associated with a transfer to the aircraft industrial facilities program to fund the procurement of a special wing drilling machine.

Airlift Aircraft (-\$.5 million)

The decrease in this budget activity resulted from the inclusion of the FY 1981 Supplemental, which reduced the C-9B program by \$.5 million.

Trainer Aircraft (+\$22.7 million)

The increase in this budget activity resulted from the inclusion of the FY 1981 Supplemental, which added \$10.0 million for the procurement of fifteen (15) T-34C trainer aircraft and \$11.5 million for twenty-five (25) TH-57 trainer helicopters, and the reprogramming of \$1.2 million to the TH-57 program to cover increased airframe costs.

Other Aircraft (-\$.8 million)

The decrease in this budget activity resulted from the inclusion of the FY 1981 Supplemental (-\$.7 million EC-130Q) and a decrease in EC-130Q non-recurring requirements (-\$.1 million).

Modification of Aircraft (-\$18.9 million)

A portion of the changes in this budget activity resulted from the inclusion of the FY 1981 Supplemental, the details of which follow:

<u>Program</u>	<u>Amount</u>
A-4 Series	-\$ .1
A-6 Series	- 1.3
EA-6 Series	- .5
A-7 Series	- 1.0
AV-8A	- .2
F-4 Series	- .8
RF-4 Series	- .1
F-14A	- .6
H-46 Series	- 1.3
H-53 Series	- .1
H-1 Series	- .1
H-3 Series	+ .9
P-3 Series	- 1.6
S-3	- .3
E-2 Series	- .3
EC-130 Series	- .4
C-130 Series	- .1
C-135	- .2
H-2 Series	- .2
Power Plant Changes	- .1
Various	- .1
Common ECM Equipment	- .4
EP-3 Series	- .1
	-\$ 9.0

Additional decreases include: \$.2 million in the A-4 series due to a schedule slippage in the APR-43 program; \$2.6 million in the A-6 series as a result of changes in the Target Recognition Attack Multi-sensor Detecting Ranging Set (TRAM DRS) program; \$.6 million in the EA-6 series due to repricing of the ICAP II (Increased Capability) modification; \$.3 million in the A-7 series due to a rephasing of FLIR (Forward Looking Infra-red) requirements; \$1.4 million in the AV-8A mod program due to a rephasing of a portion of the AV-8A to C CLOP (Conversion-in-lieu-of-procurement) program to FY 1982; \$1.4 million

in the F-4 series as a result of contract savings in the F-4J to S CILOP program; \$3.1 million in the F-14A mod program due to the deletion of the Spoiler Actuator modification (\$2.2 million) and changes in other requirements; \$.7 million in the H-46 series due to a deferral of the ARC-182 radio to FY 1982 as a result of schedule delays; \$1.6 million in the H-1 series due to the deletion of various requirements; \$ 7 million in the H-3 series as a result of rephasing SH-3H CILOP requirements; \$.6 million in the E-2 series due to delays in the ARC-182 radio program; \$1.7 in the C-130 series due to a delay in a portion of the KC-130 SLEP (Service Life Extension Program) modification; \$13.3 million in the EC-130 Series due to technical delays in the Mission Avionics program; \$3.3 million in the Various mod program as a result of the deletion of the Parachute Divestment modification; \$1.0 million in the Common ECM Equipment program due to rephasing of requirements; \$.2 million in the C-2 mod program due the deletion of the ASH-20 Crash Position Locator; \$1.5 million in the F-8 series due to a decrease in the quantity of aircraft to be modified.

The above decreases are partially offset by the following increases: \$1.9 million for the EA-3B Carrier ESM (Electronic Support Measures) modification; \$.5 million in the RF-4 series for RF-4B CILOP requirements; \$4.7 million in the H-53 series for the Self-retaining bolts and CH-53A Desert aircraft modifications; \$.3 million to fund various P-3 series requirements; \$1.5 million in the S-3 mod program for FLIR R&M increased costs; \$3.8 million in the H-2 series for increased avionics improvements; \$3.9 million in Power Plant Changes; \$3.4 million in the EP-3 series for increased CILOP costs; \$4.6 million for Miscellaneous Safety changes; \$.4 million for Common Avionics changes, \$.4 million in the C-9 series for Pingers and Integral Weight and Balance modifications; \$.4 million in the C-1 mod program for various modifications; \$.2 million in the OV-10 mod program for OV-10A to D conversion requirements.

#### Aircraft Spares and Repair Parts (-\$13.9 million)

The decrease in this budget activity resulted from the inclusion of the FY 1981 Supplemental, -\$14.0 million, partially offset by a \$.1 million increase required to correct a previous rounding error.

#### Aircraft Support Equipment and Facilities (+\$12.4 million)

A portion of the changes in this budget activity resulted for the inclusion of the FY 1981 Supplemental, the details of which follow:

<u>Program</u>	<u>Amount</u>
Common Ground Equipment	+\$ 5.3
Aircraft Industrial Facilities	- .4
Other Production Charges	- .6
	+\$ 4.3

Other changes include: the addition of \$4.0 million to Common Ground Equipment to cover a cost growth on the multi-band SAM radar for the Pinecastle Impact Range in Florida (+\$2.8 million) and to fund various engineering changes to F-4 trainers (+\$1.2 million); a net increase of \$1.7 million to Aircraft Industrial Facilities to fund the procurement of a special wing drilling machine (+\$4.6 million), partially offset by a deferral of requirements to later years due to various administrative and contractual delays; a \$.3 million increase to War Consumables to fund the modification of Aerial Refueling Stores; and the addition of \$2.1 to Other Production Charges for changes to S-3 Hybrid Avionic Test Sets (HATS) and the procurement of H-1 peculiar ground support equipment.

Reimbursable Program (+\$6.5 million)

The \$6.5 million increase in the reimbursable program reflects actual orders received.

COMPARISON OF FY 1981 FINANCING AS REFLECTED  
IN FY 1982 BUDGET WITH FY 1981 FINANCING AS  
SHOWN IN FY 1983 BUDGET

(In Thousands of Dollars)

	Financing Per FY 1982 Budget	Financing Per FY 1983 Budget	Increase (+) or Decrease (-)
Program Requirements (Total).....	\$ 6,135,107	\$ 6,285,810	+ \$ 150,103
Program Requirements (Service account).....	6,110,707	6,254,307	+ 143,600
Program Requirements (Reimbursable).....	25,000	31,503	+ 6,503
Less:			
Anticipated Reimbursements.....	25,000	31,503	+ 6,503
Reprogramming from prior year budget plans.....			
Unobligated balance available from prior year to finance new budget plans.....			
Transferred from other accounts.....			
Add:			
Unobligated balance available to finance subsequent year budget plans.....			
Transferred to other accounts.....			
Appropriation.....	\$ 6,110,707	\$ 6,254,307	+ \$ 143,600

EXPLANATION OF CHANGES IN FINANCING

(In Thousands of Dollars)

1. The entire increase in the service account of \$143,600,000 in financing available for FY 1981 resulted from the inclusion of the FY 1981 Supplemental Appropriation Act.

ANALYSIS OF UNOBLIGATED BALANCE - FY 1983 PROGRAM  
SUMMARY BY BUDGET ACTIVITY

<u>Budget Activity</u>	<u>Estimated Unobligated</u>	
	<u>Dollars</u> <u>(Millions)</u>	<u>% of Total</u> <u>Unobligated</u>
1. Combat Aircraft	\$1,326.1	63.5
2. Airlift Aircraft	51.1	2.4
3. Trainer Aircraft	10.4	.5
4. Other Aircraft	6.6	.3
5. Modification of Aircraft	324.8	15.5
6. Aircraft Spares and Repair Facilities	270.5	12.9
7. Aircraft Support Equipment and Facilities	95.3	4.6
Subtotal Direct Program	\$2,084.8	99.7
Reimbursable Program	5.4	.3
TOTAL Unobligated FY 1983	\$2,090.2	100.0

EXPLANATION BY CATEGORY

The Aircraft Procurement, Navy appropriation finances the procurement of Navy and Marine Corps aircraft and installed equipment, material and equipment for modification of aircraft in the Fleet, and related supporting programs. The budget plan

for a program year represents the total estimated cost of the procurement and supporting programs budgeted therein. To facilitate budget presentation and program administration, the appropriation is divided into the seven budget activities listed above. However, these seven activities may be combined into the following major categories of procurement.

1. Procurement of Aircraft and Installed Equipment (Budget Activities 1 thru 4)
2. Modification of Aircraft (Budget Activity 5)
3. Aircraft Spares and Repair Parts (Budget Activity 6)
4. Aircraft Support Equipment and Facilities (Budget Activity 7)

A discussion of obligation rates and an estimate of the 30 September 1983 unobligated balance for each of these categories follows:

1. Procurement of Aircraft and Installed Equipment - \$1,394.2 million

Budget Activities 1 through 4 finance the procurement of all Navy and Marine Corps aircraft and the equipment installed therein. The portion of funds budgeted for this category which is unobligated at the end of the first year is required for incentive payments and other contract cost adjustments, unscheduled airframe and equipment changes, peculiar ground support equipment, training equipment and similar items, and definitization of contracts and other orders. Much of the unobligated balance is required to conform to the full funding policy required in procurement appropriations.

For example, many airframe and engine procurement contracts and some other equipment contracts contain provisions for incentive payments based on contractor performance. These payments are not finalized until equipments are delivered, which normally occurs in the second or third year of fund availability. In addition, funds are budgeted based on historical experience for unanticipated changes and other cost adjustments. Usually, by the time a specific change is definitized as to technical aspects and price, the initial year of funding availability has passed.

Many avionics, electrical, and communications sub-systems, which are government furnished equipment (GFE) and have relatively short manufacturing lead times, can be placed on contract in the second year of fund availability and still be delivered to the weapon system contractor in time to permit installation on the production line. Many of these items, however, are procured competitively, and the administrative lead time is such that contract awards are often delayed until the second year of availability.



Another significant element in the unobligated balance carried over at the end of the first year is funds budgeted for the procurement of ground handling, special support and training equipment. To function properly, special support, test, handling, checkout and training equipment must be compatible with the configuration of the aircraft model to be supported. Due to the long production lead time of the aircraft, initiation of procurement orders for this equipment has to be delayed until late in the fiscal year to insure that the configuration of the support equipment procured is compatible with the aircraft weapons system, thus often resulting in obligations during the second year of availability. The remainder of the unobligated balance includes funds for publications and revisions thereto, which are printed only when airframe changes are definitized and equipment configurations firm, and for production and operational testing of the aircraft being procured.

2. Modification of Aircraft - \$324.8 million

Budget Activity 5 finances the modification of aircraft already in the Fleet. Aircraft modifications provide for the incorporation of technical improvements, which enhance operational capabilities, extend service life and increase the safety of operation. The unobligated balance in this category represents funds required for procurement of special test equipment and other items such as production and operational testing, technical services, publications, and final pricing of contracts or definitization of orders, which usually occur after kit production has started.

3. Aircraft Spares and Repair Parts - \$270.5 million

Approximately eighty-seven percent of the funds available for procurement of spares and repair parts are obligated in the first year of availability. The procurement of aircraft spares and repair parts must be based upon specifications for procurement of original equipment, and most of the initial spares are procured on the same contract as the aircraft or equipment which they support. Since some of these contracts are not awarded until late in the first year, the associated spare parts orders may be carried over to the second or third year. In other cases, firm requirements for repair parts for initial outfitting and replenishment support may not be definitized as to price and quantity by the end of the first year. Funds budgeted for these items are therefore carried over for later obligation. Also, negotiation of firm prices for items placed in the first year cause obligation adjustments later and funds must be reserved for this purpose. Finally, all competitive contract awards carry over to the second year because of the long administrative lead time for procurements of this type.

4. Aircraft Support Equipment and Facilities - \$95.3 million

Budget Activity 7 provides funds for Common Ground Equipment, Aircraft Industrial Facilities, War Consumables, and Other Production Charges. Unobligated balances in the Common Ground Equipment budget primarily represent contracts pending award at field activities and funds reserved for final contract pricing. The Aircraft Industrial Facilities program finances the maintenance and modernization of government owned production facilities. Unobligated balances represent funds reserved for machine tool orders which could not be definitized in the first year of availability. Unobligated balances in the War Consumables program represent funds reserved for final contracting pricing. Other Production Charges procurements include a complex mix of equipments and services, which cannot be totally obligated in the first year of availability. Firm requirements for items such as production testing, test equipment and publications are not always available in the first year.

5. Reimbursable Program - \$5.4 million

Reimbursable programs represent orders from other government activities and foreign governments for material. Almost all orders presently being received are for the sale of off-the-shelf items; consequently it is not necessary to incur an obligation to fill the customer's orders. In the event that the items require replacement-in-kind, it is first necessary to receive a collection for the sale of the item and then request replacement-in-kind authority from higher commands. Such authority is not normally granted until late in the fiscal year, or in the second year of availability, therefore obligations for the procurement of replacement items usually occur during the second year. Collections received from the sale of items to foreign countries which do not require replacement-in-kind are credited to the miscellaneous receipts account of the U.S. Treasury.

Status of Aircraft Modification Programs  
FY 1980 Modification of Aircraft  
Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
A-4 Series	16,800	- 2,907	13,893	13,136	3,232
A-6 Series	58,374	+ 438	58,812	52,933	28,717
A-7 Series	72,106	-19,298	52,808	50,019	25,342
AV-8A	22,628	- 6,196	16,432	11,666	4,751
F-4 Series	75,400	-12,754	72,646	71,877	35,327
F-8 Series	2,095	+ 993	2,088	2,001	1,642
H-46 Series	22,480	-16,180	106,300	104,772	25,851
H-53 Series	42,600	-31,264	11,336	6,897	648
H-3 Series	14,200	+ 3,797	17,997	16,218	7,517
P-3 Series	63,888	+ 1,240	65,128	59,892	33,295
E-2 Series	20,357	+ 239	20,596	18,896	2,842
C-2 Series	2,700	- 1,275	1,425	1,353	1,261
C-130 Series	11,640	- 2,521	9,119	8,372	3,957
H-2 Series	13,400	+ 1,000	14,400	10,518	10,919
Various	2,100	- 2,100	0	0	0
Power Plant Changes	9,200	+ 450	9,650	8,115	1,722
Misc. Safety Changes	1,200	+ 2,263	3,463	3,261	746
F-14A	19,200	+ 1,329	20,529	18,300	4,536
S-3	36,651	-18,038	18,613	15,238	3,259
EA-6 Series	28,314	+ 3,587	31,901	25,237	9,276
H-1 Series	31,313	+ 3,662	34,980	32,763	922
A-3 Series	6,700	- 4,597	2,103	1,850	438
RF-4 Series	1,700	+ 519	2,219	2,198	1,428
EC-130 Series	12,811	+ 1,289	14,100	13,457	8,820
C-9 Series	1,784	-	1,784	180	0
F-5 Series	400	+ 392	792	613	41
C-135 Series	400	-	400	400	227

1/ As of 31 December 1981

Status of Aircraft Modification Programs  
FY 1980 Modification of Aircraft  
Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
Common Avionics Changes	1,200	+ 180	1,380	604	442
Common ECM Equipment	22,200	-12,155	10,045	9,973	9,678
DP-2 Series	<u>100</u>	<u>-</u>	<u>100</u>	<u>0</u>	<u>0</u>
Total B.A. 5	722,946	-107,907	615,039	560,744	226,836

1/ As of 31 December 1981

Status of Aircraft Modification Programs  
FY 1981 Modification of Aircraft  
 Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
A-4 Series	800	+ 4,700	5,500	3,858	1,501
A-6 Series	93,600	- 7,151	86,449	73,848	12,815
A-7 Series	65,200	+ 2,815	68,015	55,196	2,456
AV-8A	15,457	- 1,100	14,057	12,554	1,534
F-4 Series	57,100	- 7,115	49,914	45,614	6,483
F-8 Series	2,100	- 1,502	598	37	-
OV-10	800	+ 200	1,000	736	46
H-46 Series	92,210	- 4,571	87,639	82,323	5,117
H-53 Series	6,200	+ 4,245	10,445	7,660	171
H-3 Series	7,866	+ 1,779	9,645	7,889	434
P-3 Series	108,452	+ 294	108,746	91,031	7,058
E-2 Series	24,200	- 4,685	19,515	18,816	473
T-39 Series	300	-	300	-	-
C-2A	200	- 200	-	-	-
C-130 Series	8,587	- 664	7,923	4,012	471
H-2 Series	13,800	+ 3,780	17,580	16,448	- 243
Various	3,695	- 3,328	367	258	8
Power Plant Changes	8,300	+ 3,942	12,242	10,195	209
Misc. Safety Changes	1,100	+ 4,630	5,730	5,011	44
F-14A	43,500	- 3,232	40,268	38,278	1,886
S-3A	17,460	+ 4,897	22,357	18,543	515
EA-6 Series	44,970	- 8,600	36,370	24,966	3,675
H-1 Series	4,675	- 324	4,351	2,102	204
T-34 Series	200	+ 50	250	-	-
A-3 Series	-	+ 1,900	1,900	1,883	7
RF-4 Series	3,400	+ 453	3,853	1,510	40
EP-3 Series	8,400	+ 3,449	11,849	5,438	1,014
EC-130 Series	30,430	-13,299	17,131	11,290	2,427

1/ FY 1981 Column of FY 1983 President's Budget

Status of Aircraft Modification Programs  
FY 1982 Modification of Aircraft  
Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
A-4 Series	46,500	-20,700	25,800	580	
A-6 Series	111,100	- 700	110,400		
A-7 Series	95,000	+ 2,100	97,100		
AV-8A	13,900	+ 4,500	18,400		
F-4 Series	34,400	+ 1,900	36,300		
F-8 Series	600		600		
H-46 Series	42,300	+ 2,000	44,300		
H-53 Series	6,000	+ 1,700	7,700		
H-3 Series	2,200	+ 2,100	4,300		
P-3 Series	104,400	+ 1,500	105,900		
E-2 Series	24,700	- 900	23,800		
T-39 Series	200		200		
C-130 Series	15,100	- 200	14,900	5,950	
H-2 Series	7,800	+ 200	8,000		
Various	19,700		19,700		
Power Plant Changes	10,200		10,200		
Misc. Safety Changes	1,200		1,200		
F-14A	91,400	- 2,400	89,000		
S-3	26,500	+ 1,500	28,000		
EA-6 Series	49,800	- 1,400	48,400		
H-1 Series	10,600	+ 800	11,400		
T-34 Series	300	+ 200	500		
A-3 Series	22,800	+ 1,600	24,400		
RF-4 Series	24,500	+ 100	24,600		
EP-3 Series	11,500		11,500		
EC-130 Series	37,000	- 300	36,700	600	
C-1A	200	+ 100	300		

1/ FY 1982 Column of FY 1983 President's Budget

Status of Aircraft Modification Programs  
FY 1981 Modification of Aircraft  
Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
C-1A Series	200	+ 1,614	1,814	1,721	27
C-9 Series	200	+ 402	602	-	-
F-5 Series	900	+ 43	943	48	-
FEWSG	11,800	+ 4,900	16,700	12,250	539
Common Avionics Changes	1,100	+ 740	1,840	798	50
Common ECM Equipment	23,800	+ 3,545	27,345	17,796	3,216
T-44 Series	100	-	100	0	-
TOTAL B.A. 5	701,102	- 7,754	693,338	572,109	52,177

1/ FY 1981 Column of FY 1983 President's Budget

Status of Aircraft Modification Programs  
FY 1982 Modification of Aircraft  
Programs as of 31 October 1981

(Thousands of Dollars)

<u>Program</u>	<u>Appropriated</u>	<u>Reprogramming</u>	<u>Total Program 1/ Value</u>	<u>Total Obligations</u>	<u>Total Expenditures</u>
C-9 Series	200		200		
F-5 Series	1,100		1,100		
FEWSG	16,900	+ 3,700	20,600		
Common Avionics Changes	1,300		1,300		
Common ECM Equipment	96,500		96,500		
T-44 Series	500		500		
F/A-18	<u>2,800</u>	<u>+ 100</u>	<u>2,900</u>	<u>          </u>	<u>          </u>
TOTAL B.A. 5	929,200	- 2,500	926,700	7,130	-

1/ FY 1982 Column of FY 1983 President's Budget



FY 1983 Aircraft Modification Program

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>A-3 Mod</u>		
100-81	Carrier-Based ESM (Sustainability) (EA-3B, TA-3B)	1-96
<u>A-4 Mod</u>		
33-81	AN/APR-43 (A-4M)	1-98
1-77	Angle Rate Bombing System (A-4M)	1-99
36-84	AGM-65 MAVERICK Missile System Provisions (A-4M)	1-100
1-84	Air Data Computer System Improvement (A-4M)	1-101
4-83	AN/ALQ-162 Countermeasures Set (A-4M)	1-103
<u>A-6 Mod</u>		
3-81	Tanker Conversion (CILOP) (A-6E)	1-105
5-82	KA-6D R&M and SLEP Program (KA-6D)	1-106
1-76	Target Recognition and Attack Multisensor (TRAM) (A-6E)	1-108
9-77	ASN-92 (CAINS) and CNI Combined (Configuration Update) (A-6E)	1-110
102-80	A-6E Weapon Control System Improvement (A-6E)	1-112
1-78	AN/AVA-1 Vertical Display Indicator (VDI) (A-6E, KA-6D)	1-114
51-82	APQ-156 Radar Improvement Program (A-6E)	1-116
10-79	A-6E Rewing (SLEP) (A-6E)	1-118
4-81	Combination Radio (AN/ARC-182) (KA-6D)	1-120
10-80	Combination Radio (AN/ARC-182) (A-6E)	1-121
47-82	Mission Recorder USH-17(V) and UPQ-5 Display Performance Imp. (A-6E)	1-122
13-79	Aircraft Landing Gear Improvements (A-6E, KA-6D)	1-124
8-83	A-6 Weapons Integration (A-6E)	1-126
9-83	Radar Data Converter Improvements (A-6E)	1-127
10-83	AN/ALR-67 Receiving Set, Countermeasures (A-6E)	1-128
5-84	Stand-off Air-to-Ground Weapons (A-6E TRAM)	1-130
<u>EA-6 Mod</u>		
12-81	ICAP II (EA-6B)	1-131
19-79	ALQ-99 Pods (EA-6B)	1-133
57-70	Defensive Electronic Countermeasures (DECM) Improvement (EA-6A)	1-135
14-81	Signal Data Converter (SDC)/Inertial Navigation System (INS) Improvement (EA-6B)	1-136
13-81	Weapons System Update (ALQ-76/86) (EA-6A)	1-138

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>EA-6 Mod (Cont'd)</u>		
11-81	AN/ARC-182 Combination Radio (EA-6A/B)	1-140
13-83	AN/ALR-67 Receiving Set, Countermeasures (EA-6B)	1-141
14-83	Installation of Supplemental Cooling Turbine (EA-6B)	1-143
15-83	Replacement of AYA-6 Computer with AYK-14 (EA-6B ICAP)	1-145
53-82	EA-6A Radar (APS-130) (EA-6A)	1-146
<u>A-7 Mod</u>		
9-82	Improvement of Fuel Quantity Gaging System (A-7C/E, TA-7C)	1-147
10-82	AN/APQ-126 Radar Set and AN/ASN-90 Inertial Measurement Set Update (IMU) (A-7E/C, TA-7C)	1-148
11-82	I <sup>2</sup> R MAVERICK Airframe Provisions (A-7E FLIR Configured)	1-149
16-81	TF-41 Engine Hot Section Extended Life Program (HELP) (A-7E)	1-151
13-80	HARM (A-7E with FLIR Provisions)	1-154
15-80	Digital Scan Converter for AN/APQ-126 Radar (A-7E/TA-7C)	1-156
17-80	Automatic Maneuvering Flap (AMF) (A-7B/E, TA-7C)	1-157
18-80	WALLEYE Extended Range Data Link (ERDL) Anti-Jam and Multiple Carriage (A-7E)	1-158
23-79	A-7E FLIR (A-7E and TA-7C)	1-160
26-79	AN/APR-43 Compass Sail/Clockwise (A-7E)	1-162
38-84	Air Data System Improvements (A-7C/E, TA-7C)	1-163
21-83	AN/ALQ-162 Countermeasures Set (A-7E)	1-164
<u>AV-8 Mod</u>		
13-82	On-Board Oxygen Generating System (OBOGS)	1-166
22-83	Sealed Lead Acid Battery (AV-8A/C)	1-168
19-80	DECM Pod (AV-8A/C)	1-169
<u>F-4 Mod</u>		
18-81	Follow-On Structural Fatigue (F-4S)	1-170
60-82	AN/ARC-159 Radio (F-4S)	1-172
19-81	AN/AWG-10A Obsolescence/R&M Program (F-4S)	1-173
<u>RF-4B Mod</u>		
76-81	J-79 Low Smoke Engine Provisions (RF-4B)	1-174
61-82	AN/APR-43 Compass Sail Clockwise (RF-4B)	1-175
23-83	AN/ALQ-162 Countermeasures Set (RF-4B)	1-176

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>F-14 Mod</u>		
62-82	Television Camera Sight (TCS) (F-14A)	1-177
25-81	PHOENIX AN/AWG-9, Computer Expanded Memory (F-14A)	1-178
24-83	AN/ARC-182 Radio (F-14A)	1-179
63-82	Spoiler Actuator Water Integrity (F-14A)	1-180
38-80	Replace Selected Wiring Harnesses (F-14A)	1-181
25-83	Weapons Rail Operational Improvement (F-14A)	1-183
17-82	Replace Aircraft Wiring/Add Multiplexer Data Buss (MUX) (Wiring Only) (F-14A)	1-184
15-82	TF-30-P-414A Package (F-14A)	1-186
27-83	Nose Wheel Steering Damper (F-14A)	1-188
8-84	AWG-9 Digital Modification Update (F-14A)	1-189
32-83	Structural Improvements (F-14A)	1-191
9-84	AN/ALR-67 Receiving Set, Countermeasures (F-14A)	1-193
<u>F-18 Mod</u>		
20-82	Correction of Discrepancies (F/A-18, TF/A-18)	1-195
34-83	AN/ALR-67 Receiving Set, Countermeasures (F/A-18, TF/A-18)	1-196
36-83	Non-Cooperative Target Recognition (NCTR) (F/A-18, TF/A-18)	1-197
37-83	Provisions for SPARROW AIM-7M (F/A-18, TF/A-18)	1-198
38-83	Installation Provisions for TACTS (F/A-18, TF/A-18)	1-199
39-83	One-Box INS Configuration (F/A-18, TF/A-18)	1-200
10-84	DA INCO 718 Material Incorporation (F/A-18, TF/A-18)	1-201
11-84	Correction of Discrepancies Identified during Preliminary Evaluation and Subsequent Flight Test Programs (F/A-18, TF/A-18)	1-203
12-84	Elimination of Fuel Vapor Puffs (F/A-18, TF/A-18)	1-205
<u>OV-10 Mod</u>		
39-84	OV-10D Service Life Extension (OV-10D)	1-206
103-81	APR-39 Radar Warning Receiver (OV-10A/D)	1-207
<u>H-46 Mod</u>		
21-82	AN/ARN-118 TACAN (HH-46A, CH-46D, CH-46E, UH-46D)	1-208
31-81	H-46 Safety, Reliability and Maintainability (S,R&M) Update (CH/UH/HH-46)	1-209
66-79	ALE/APR-39 (CH-46E)	1-211
9-78	H-46 Fiberglass Blades (CH-46D/E/F, UH/CH/HH-46A)	1-213
22-77	AN/ALQ-157(V) IR Jammer (CH-46E)	1-214

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>H-46 Mod (Cont'd)</u>		
65-82	AN/ARC-182 Combination Radio (CH-46D/E, HH-46)	1-216
42-83	Engine Air Particle Separators (CH-46E)	1-217
66-82	Night Vision (CH-46D)	1-219
<u>H-53 Mod</u>		
49-80	Glass-Faced Windshield (CH-53A/D, RH-53D)	1-221
68-79	AN/ALE-39 Dispenser Set and AN/APR-39 Radar Warning Receiver (CH-53A/D)	1-223
69-79	AN/ALQ-157(V) IR Jammer (CH-53A/D)	1-224
43-83	Crashworthy Armored Pilot Seats (CH-53A/D, RH-53D)	1-226
67-82	Night Vision (CH-53A/D, RH-53D, CH-53E)	1-227
<u>H-1 Mod</u>		
30-77	Infrared Suppression (AH-1J, AH-1I, UH-1N)	1-229
24-82	APR-44 (UH-1N)	1-231
26-82	AN/ALQ-136 (AH-1J/T)	1-232
25-82	APR-44 (AH-1J/T)	1-233
68-82	ANVIS Night Vision System (UH-1N)	1-234
69-82/21-84	ANVIS Night Vision System/FACTS (AH-1T/J)	1-236
109-83	Communications Central AN/ASC-26 (UH-1N)	1-238
<u>H-2 Mod</u>		
8-78	LAMPS MK I Avionics Improvement (SH-2F)	1-239
22-84	Composite Tail Rotor Pylon Design Improvement (HH-2D, NHH-2D, SH-2F)	1-242
<u>H-3 Mod</u>		
46-83	Service Life Extension/Update Program (SH-3H/SH-3D)	1-244
<u>P-3 Mod</u>		
31-82	MAD System Integration (P-3C)	1-245
22-78	IACS Low Data Rate Aircraft System (P-3C)	1-246
104-79	HARPOON (P-3A/B/C)	1-248
84-79	Triple Vernier and DICASS Improver to AQA-7 (P-3B/C)	1-250
47-81	Inertial OMEGA Update (P-3C)	1-252
57-72	Infrared Detecting System (IRDS) (P-3A/B/C)	1-254
71-82	PARKHILL (P-3A/B/C)	1-256
29-82	Special Project Aircraft (P-3B)	1-257
47-83	Doppler Track System Integration (P-3C)	1-258
48-83	ALR-66 ESM System (P-3A/B)	1-259

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>EP-3 Mod</u>		
48-81	CILOP (EP-3E/B)	1-260
51-83	Sensor Update (CILOP) (EP-3E)	1-262
<u>S-3 Mod</u>		
93-79	Flight Control System Mod (S-3A)	1-263
102-79	FLIR Reliability Improvement (S-3A)	1-264
45-82	AN/ARC-182 Combination Radio (S-3A)	1-266
54-83	Display Generator Units (DGU) Mod (S-3A)	1-267
24-84	Auxiliary Power Unit Increased Power (S-3A)	1-268
25-84	ICS Communications Control Group (S-3A)	1-269
<u>US-3 Mod</u>		
59-83	Flight Control System Mod (US-3A)	1-270
<u>E-2 Mod</u>		
49-82	Passive Detection System Improvements (E-2C)	1-271
63-83	T56-A-425 Engine Water Injection (E-2C)	1-272
54-83	TRAC-A (Weapon Improvement) (E-2C)	1-274
27-84	ARC-182 Combination Radio (E-2B/C)	1-275
<u>C-9 Mod</u>		
29-84	FAA Configuration Update (Commercial Service Bulletins) (C-9B)	1-276
<u>C/KC-130 Mod</u>		
15-78	SLEP (KC-130F)	1-278
78-83	Long Range Navigation System (C-130F, KC-130F)	1-280
80-83	Solid State Weather Radar, AN/APN-59E (C-130F, KC-130F, KC-130R)	1-282
<u>EC-130 Mod</u>		
64-81	Mission Avionics (EC-130G/Q)	1-283
16-78	SLEP (EC-130G/Q)	1-285
38-82	HF/UHF Secure Voice (VINSON) (EC-130G/Q)	1-287
84-83	Survivable Time Standard (EC-130G/Q)	1-288
77-81	EMP Layer I (EC-130G/Q)	1-289
32-82	EMP Hardening (Layers II and III) (EC-130G/Q)	1-290
111-83	Narrowband Encryption (EC-130G/Q)	1-291

<u>OSIP No.</u>	<u>Description</u>	<u>Page No.</u>
<u>FE4SG/C-135 Mod</u>		
1-82	E/F Band Jammer (ERA-3B)	1-292
2-82	G/H Band Jammer (ERA-3B)	1-294
40-82	E/F and G/H Band Jammers (NKC-135A)	1-296
66-81	A/B Band Jammer (ERA-3B)	1-298
68-81	C/D Band Jammer (ERA-3B)	1-300
93-83	I/J Band Jammer (NKC-135A)	1-302
94-83	I/J Band Jammer (ERA-3B)	1-304
95-83	ESM Receiver (ERA-3B)	1-306
<u>Various</u>		
96-83	Sea Water Actuated Release System (SEWARS) (A-4, A-6, A-7, AV-8, F-4, RF-8, F-14, F-18, S-3, T-2)	1-307
97-83	AERO-7A/B Rack Improvement (A-6E, KA-6D, A-4M)	1-308
32-84	ASW Pods for Carrier Tactical Aircraft (A-6E, A-7C/E)	1-309
<u>Common ECM</u>		
110-79	AN/ALQ-126A Improvement (Redesignated AN/ALQ-126B) (A-4, A-6, A-7, F-4, F-8, F-14)	1-310
109-79	AN/ALR-45F(V) (A-4M, OA-4M, F-43, RF-4B, A-7E, KA-6D, AV-8C)	1-312
<u>Common Avionics</u>		
34-84	Digital Air Data Converter (E-2C, A-7, EA-6A/B, KA-6D, and Others)	1-314
<u>Power Plants</u>	Various Power Plant Changes	1-315
<u>Safety</u>	Various Emergent Safety Changes	1-316

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: AFN - Activity 5

Modification Title and No.: Carrier-Based ESM (Sustainability) (OSIP 100-81)

Models of Aircraft Affected: EA-3B, TA-3B

Description/Justification:

A critical need exists in the Fleet for a carrier based intelligence exploitation system. The EA-3B weapon system is currently used to meet this need. The present EA-3B ESM suite, installed in the late 1960's as a quick reaction capability (QRC) program, comprises a collection of weapons replaceable assemblies (WRA's) from WRA's developed during the fifties. Their archaic technology places the EA-3B at a disadvantage when performing its mission since major portions of the ESM suite and radar have been documented as unsupportable due to nonexistent manufacturing capability. In addition, the recent decision by OSD requiring the Navy to continue operating EA-3B aircraft, current fleet operational tasking, and Indian Ocean operations cannot be satisfied without replacement of the logistically unsupportable hardware.

This program provides for replacement of selected WRA's of the ESM suite with newer technology WRA's to both increase mission effectiveness and alleviate the logistics support problems, and installs the in-production communications and navigation (COMNAV) systems prototyped in an A-3B aircraft. These replacement equipments are currently in use on EP-3 aircraft which operate in the same squadrons as EA-3B's. This cost-effective approach reduces development, acquisition and support costs.

This program provides for the procurement, integration, installation, test, and initial support of these ESM and COMNAV systems in 14 EA-3B aircraft and COMNAV systems in 5 TA-3B training aircraft.

Development Status: This modification utilizes equipments that are currently in production. Nonrecurring engineering is required to integrate the new systems into the EA-3B and TA-3B aircraft. All equipments will have had approval for service use (ASU) and will be flight tested to verify the installation. Current plans include assistance in system integration by the Naval Avionics Center, and kit manufacture and installation by Naval Air Rework Facility (NARF) Alameda and/or the contractor.

OSIP 100-81

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,900	13	\$10,545	6	\$6,219			19	\$18,664
O&MN Install.						\$1,129	\$521			1,650
APN-6 Spares		\$666		\$2,720		\$2,156				5,542
GRAND TCTAL										\$25,856

Installation Data: Installation will be accomplished by Contractor Field Mod Teams and by NARF Alameda during SDLM/FMT.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/APR-43 (OSIP 33-81)

Models of Aircraft Affected: A-4M

Description/Justification:

The AN/APR-43 system is a radar warning receiver which will receive approval for service use (ASU) in the A7E, and operates in conjunction with the AN/ALR-45F Radar Warning Receiver. It provides additional combat mission essential countermeasures warning and direction finding capability beyond that provided by the existing AN/ALR-45(V) and AN/ALR-50(V) installations and negates the need for the AN/ALR-50 which will be removed.

Development Status: TECHEVAL was completed in May 1980. Extension of ASU will be substantiated by appropriate test and/or documented records of operational flights and is expected in late FY 1982. RDT&E,N Program Element Number is 63206N (WO 638-TW).

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	24	\$4,591	41	\$7,248	33	\$6,898					108	\$19,437
O&MN Install.					(34)	\$668	(42)	\$818	(32)	\$628		2,114
APN-6 Spares		-0-										-0-
GRAND TOTAL												\$21,551

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-4M Angle Rate Bombing System (OSIP 1-77)

Models of Aircraft Affected: A-4's

**Description/Justification:**

The Angle Rate Bombing System (ARBS) locks to video targets and tracks laser illuminated targets for close air support (CAS) bombing attack with conventional and/or guided weapons providing the U.S. Marine Corps close air support A-1H aircraft with improved bombing accuracy and first pass acquisition capability. It replaces the existing CP-741 weapons delivery system which cannot meet the USMC CAS requirement for bombing accuracy and laser spot tracker attack. ARBS has completed full system feasibility demonstration and is approved for service use.

**Development Status:** Testing was completed in December 1978. Approval for service use was granted.

**Project Financial Plan:**

	FY 1978		FY 1979		FY 1980		FY 1981		FY 1982		FY 1983	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	17	\$12,843		\$14,924	54	\$13,290		\$5,039	24	\$25,240	13	\$22,598
O&M Install.							(1)	\$47	(42)	\$2,348	(36)	\$2,286
APN-6 Spares				\$3,617		\$1,917		\$916		\$5,501		\$3,889

	<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5					108	\$ 94,494
O&MN Install.	(22)	\$1,159	(7)	\$372		6,222
APN-6 Spares						15,840

GRAND TOTAL	\$116,556
-------------	-----------

Installation Data. Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AGM-65 MAVERICK Missile System Provisions (OSIP 36-84)

Models of Aircraft Affected: A-4M

Description/Justification:

Incorporation of MAVERICK Missile provisions into the A-4M will give the Marines a highly accurate anti-armor/anti-fortification capability which is consistent with DOD direction. This program will install electro optical and laser missile capability in the A-4M.

Development Status: Two FY-77/77 production aircraft were prototyped with MAVERICK provisions by the contractor. One prototype aircraft has completed structural testing with MAVERICK missile on Stations 1 and 5.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	21	\$3,883	51	\$6,070	40	\$3,998	12	\$900				
O&MN Install.			(11)	\$116	(38)	\$397	(25)	\$262	(32)	\$335	(18)	\$188
APN-6 Spares		\$444		\$854		\$643						
 <u>TOTAL</u>												
	<u>Qty</u>	<u>Cost</u>										
APN-5	124	\$14,851										
O&MN Install.		1,298										
APN-6 Spares		<u>1,941</u>										
GRAND TOTAL		\$18,090										

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) concurrently with Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Air Data Computer System Improvement (OSIP 1-84)

Models of Aircraft Affected: A-4M

Description/Justification:

There are three different air data devices in the A-4M. The AXC-666 air data computer's primary function is to provide attitude and airspeed information to the HUD display and to weapons system. The mean flight hours between failure (MFHBF) will fluctuate depending upon how actively the A-4 is being used in bombing practices and derbys. A second air data device is the AFCS air data sensor. This device is located in the tail section. It is reported to be unreliable. The AFCS is not flight essential thus it is not necessarily operational for each flight. There has been some mention of removing the system. The third air data device is the AIMS CPU-66 altitude computer, the sole purpose of which is to satisfy the Air Traffic Control automatic altitude reporting requirement. The altitude displayed on the HUD provided by the AXC-666 and the altitude displayed on the pilots AAU-19 provided by the CPU-66 are not synchronous and have been reported as a problem.

Incorporation of the digital air data computer being developed under the AVCS program would be a single air data computer replacing the AXC-666, the CPU-66, and the AFCS air data sensor. Reliability of the single air data device as compared to the three air data devices is expected to be 10 times better. Similar improvements in maintainability can be reasonably anticipated. The new air data system would provide airspeed and altitude outputs to the HUD suitable for primary flight. The DADC provides for MIL-SID-1553 MUX in anticipation of CILOP programs.

Development Status: A prototype AFC kit and digital air data computer will be installed in an A-4M aircraft with ARBS incorporated between October 1982 and January 1983. TECHEVAL and OPEVAL testing to be accomplished between February 1983 and January 1984. Approval for service use is expected in March 1984.

OSIP 1-84

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$2,850	42	\$2,067	28	\$1,447					118	\$6,364
O&MN Install.			(16)	\$203	(44)	\$558	(31)	\$392	(27)	\$342		1,495
O&MN Factory Trng.		\$20		\$40								60
APN-6 Spares		\$626		\$379		\$241						<u>1,246</u>
GRAND TOTAL												\$9,165

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 4-83)

Models of Aircraft Affected: A-4M

Description/Justification:

The AN/ALQ-162 provides complementary DFCM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy Tactical aircraft against radar directed air defense systems.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981 for test and evaluation. The TEMP (No. 593) is presently in review to support Navy test and evaluation. TECHEVAL is planned for the second quarter of FY 1982 and OPEVAL is scheduled in August 1982 with approval for service use expected November 1982. hDT&E,N Program Element Number 64224N applies.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$557	11	\$4,176	46	\$5,465	51	\$4,443	9	\$116
O&MN Install.			(1)	\$19	(11)	\$209	(44)	\$836	(31)	\$589
APN-6 Spares		\$22		\$581		\$1,181				

1-103

OSIP 4-83

Project Financial Plan (Cont'd):

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			118	\$16,407
O&MN Install.	(31)	\$589		2,242
APN-6 Spares				<u>1,784</u>
GRAND TOTAL				\$20,433

Installation Data: Installation of the airframe change kit will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Tanker Conversion (CILOP) (OSIP 3-81)

Models of Aircraft Affected: A-6E

Description/Justification:

The KA-6D aircraft fulfills the operational requirement for Navy aircraft inflight refueling. This refueling requirement is increasing with the introduction of new aircraft and thus the inventory objectives for the KA-6D aircraft are growing. Increased demand and lack of a replacement aircraft have reduced the KA-6D inventory to an unacceptable level. The KA-6D aircraft carries 20,000 pounds of fuel which can be transferred to another aircraft at the rate of 350 gallons per minute. This conversion from A-6E aircraft to KA-6D aircraft requires the modification of some avionics and the installation of an integral refueling package.

Development Status: Originally 78 A-6A aircraft were converted to KA-6D aircraft. No further development is required to initiate the A-6E to KA-6D conversion program.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	4	\$4,216	4	\$4,472	8	\$12,201	8	\$19,119	8	\$19,952
O&MN Install.			(2)	\$1,493	(4)	\$3,374	(6)	\$8,113	(8)	\$12,852
APN-6 Spares						-0-				

  

	<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	8	\$21,813	8	\$23,217					48	\$104,990
O&MN Install.	(8)	\$12,852	(8)	\$12,852	(8)	\$12,852	(4)	\$8,568		72,956
APN-6 Spares										-0-
GRAND TOTAL										\$177,946

Installation Data: Installation will be accomplished by the contractor and the Naval Air Rework Facility (NARF).  
1-105



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: KA-6D Reliability, Maintainability (R&M) and Service Life Extension Program (SLEP) (OSIP 5-80,

Models of Aircraft Affected: KA-6D

Description/Justification:

The KA-6D is the only carrier aircraft dedicated to the mission of inflight refueling. With the introduction of new fighter and attack aircraft to the fleet there will be an increase in the requirement for inflight refueling. In order to meet fleet tanker needs through the mid-1990's, the existing tanker assets must be upgraded in order to maintain readiness requirements. The existing KA-6D tanker force consists of older A-6A aircraft which were converted to the KA-6D configuration. This program will bring the configuration of the older tankers up to the latest configuration as well as incorporate improvements to extend the service life, and increase reliability and maintainability. The SLEP improvements will consist of the following:

- a. Install new wings/wing material which includes new FS227 and FS288 bulkheads (made with 7050-T73 material which is more resistant to stress corrosion) and a new drag linkbrace which will approximately double the service life of the aircraft.
- b. Increase the arresting hook strength to the same strength as the A-6E.
- c. Modify the stabilizer shift mechanism and provide electrical switching to prevent failure and inadvertent actuation of spin assist in flight.
- d. Improve flap/slat system by: (1) providing improved sealing of flap switch box, slat gear box and slat cam, (2) providing hermetically sealed switches, (3) replacing flap box cam and switches with more wear-resistant material, (4) providing higher strength slat actuator attach lugs, and (5) eliminating the 40 degree flap position.
- e. Improve the integrity of the fuel system.
- f. Complete rewire.

Development Status: All development is complete.

OSIP 5-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$4,259	6	\$10,898	12	\$23,020	12	\$24,723	12	\$26,454	5	\$14,615
O&MN Install.					(2)	\$3,534	(6)	\$9,532	(12)	\$16,922	(12)	\$16,922
APN-6 Spares		\$179		\$531		\$1,026						

	<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5					49	\$ 103,970
O&MN Install.	(12)	\$16,922	(5)	\$8,121		71,953
APN-6 Spares						1,736
GRAND TOTAL						\$177,659

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Target Recognition and Attack Multisensor (TRAM) (OSIP 1-76)

Models of Aircraft Affected: A-6E

Description/Justification:

This program will provide the A-6E with improved capability for location and surveillance of opposing naval forces, and the countering of operations during periods of darkness. In cold war, reconnaissance requires maximum night identification and surveillance capability. In limited war, accurate 24-hour strike capability against enemy sea and sea support targets will be the highest priority mission of the A-6E. This system, developed under SOR W11-93, includes a passive imaging infrared sensor for target classification and identification of a laser target designator/ranger boresighted with the infrared sensor for delivery of laser guided weapons, and a laser search set to locate targets illuminated by external laser designators. All equipment is collocated in a 20-inch diameter turret which is space stabilized and cued to suspected targets by the search and acquisition radar. The TRAM components do not replace or degrade existing A-6E equipments and weigh less than 500 pounds.

In order to achieve an effective force level of TRAM capable aircraft and ensure commonality of configuration and support, the TRAM system is being installed in both A-6E production aircraft and A-6E aircraft being modified to production configuration under the A-6 ASN-92 (CAINS) and CNI Combined (Configuration Update) OSIP 9-77. A6E aircraft delivered since CY 1976 have TRAM wiring and cockpit provisions incorporated as well as CAINS and new Communication, Navigation, Identification (CNI) equipment.

Development Status: The development program was funded by RDT&E. Approval for service use was granted in March 1980 and full production release was issued in April 1980.

**Project Financial Plan:**

\* Quantity represents DRS's.

1-109

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-6 ASN-92 (CAINS) and CNI Combined (Configuration Update) (OSIP 9-77)

Models of Aircraft Affected: A-6E

Description/Justification:

The AN/ASN-92(V) Inertial Measurement Unit (IMU), Mount, and Power Supply Unit (PSU) will replace the present AN/ASN-31 Inertial Navigation System which has been phased out of production. The AN/ASN-92 is being installed in production and retrofit A-6E aircraft. The ASN-92 has demonstrated its capability in meeting performance parameters including higher reliability than presently attainable with the ASN-31 system. The ASN-92 IMU, Mount, and PSU are common equipment on the F-14A, S-3A, E-2C and the RF-4B. This modification will significantly reduce the number of spares and unique test equipment. The weight and volume of the ASN-92 equipment is 55.4 pounds and 1.0 cubic feet, respectively. The A/C Converter modifies the existing converter to adapt the ASN-92 signals to the A-6E avionics with no increase in weight or space. BNCS/BIT is a modification to the cockpit controls of the aircraft radar to provide improved radar operator efficiency with no increase in space or weight. The MU-603/ASQ-133A Auxiliary Core Memory Unit (ACMU) provides an additional 8,000 words of core storage to meet the CAINS software requirement. The ACMU is interchangeable functionally and electrically with the existing computer memory. The memory weighs 39 pounds and is .709 cubic feet.

The reliability and maintainability of the A-6E is being enhanced by the replacement of the present ASQ-57 CNI package (a 1950 design) with modern, flexible, more reliable and individually mounted government furnished CNI equipment (i.e., two AN/ARC-159 UHF radios, AN/ARN-84 TACAN set, AN/APY-72 transponder). The ASQ-57 package provides for only one UHF radio resulting in loss of communication upon failure. This replacement will provide greater reliability/maintainability and at the same time will significantly decrease the maintenance manhours and associated support. There will be a 57 percent reduction in weight.

Development Status: All GFE hardware has been developed and is being installed in A-6E production aircraft.

Project Financial Plan:

\* Prototype.

Installation Data: Installation is being accomplished by the contractor under an integrated A-6E configuration update program which includes the concurrent retrofit of CAINS, CNI and TRAM equipments in 163 of the original versions of the A-6E. Fifty-one of these aircraft are being rewinged coincidental with retrofit. All retrofit aircraft also receive SDLM.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Weapon Control System Improvement (OSIP 102-80)

Models of Aircraft Affected: A-6E

Description/Justification:

The A-6 all-weather attack aircraft was introduced in the Navy in 1963. Numerous modifications have been incorporated in the aircraft since its introduction primarily to improve its reliability, safety, and operational capability. The latest model of the aircraft, the A-6E, is being purchased as a new production article as well as a Conversion in Lieu of Procurement (CILOP) program which converts the older A-6A to the A-6E. The CILOP program completed in FY 1979.

Throughout the years, as new ordnance/weapons have been introduced into the inventory, the A-6 has been adapted to ensure compatibility so that the aircraft will remain current in its weapon delivery capability. In most instances, the adaptations to the aircraft have consisted of the addition of avionics packages/wiring/software dedicated to the specific weapons. As a result, there is a proliferation of weapon control system configurations in Fleet aircraft which are difficult to maintain. Further adaptations to the weapon control system, utilizing the approach of adding major processing packages/wiring dedicated to a specific weapon can no longer be tolerated.

The 4 Pi computer in the A-6E aircraft series is limited in memory capacity. Modifying the computer with a double density memory capability will provide the additional capacity required for current weapons, as well as those postulated in the future, thus eliminating the need for dedicated processing packages for each weapon. The armament wiring complexity of the aircraft can also be greatly simplified, leading to a universal wiring concept of implementation. The overall result will lead to higher operational reliability in the fleet and a reduction in ordnance maintenance manhours, as well as provide all A-6 aircraft with full capability to carry and deliver current weapons such as SIDEWINDER, WALLYE, SHRIKE, etc. Ample growth is inherently available for such follow-on weapons as LASER MAVERICK, HARPOON, HARM and TOMAHAWK.

With this as the basis, the program consists of the installation of improved armament wiring in all aircraft which will be accomplished during the configuration update of A-6E aircraft to A-6E TRAM (described in OSIP 1-76) to minimize installation costs. Production A-6E TRAM aircraft received the new wiring installation with FY 1979 procurement. A-6E TRAM configured aircraft (101) delivered prior to the initiation of this program will have the wiring provisions installed during rewiring (SLEP) in FY 1983 through FY 1986. In addition, this program will install modified computers (double density memory) in 50 aircraft. These 50 aircraft (first deliveries in FY 1982) will have HARPOON missile capability fully integrated into the weapon system without the necessity of a dedicated HARPOON processing unit. Additional aircraft can be upgraded to the full capability by installing the modified computer at a later date if required.

OSIP 102-80

Development Status: The improved armament wiring completed engineering and is being installed in FY 1979 new production aircraft. The HARPOON computer modification has completed testing including tests with Operational Flight Profile.

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	35	\$2,160	47	\$2,944	20	\$4,772	13	\$8,477	34	\$11,263	24	\$10,669
O&MN Install.			(17)	\$1,092	(35)	\$2,451	(32)	\$2,446	(15)	\$1,399	(22)	\$2,065
APN-6 Spares		\$1,098		\$835		\$640						

	<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>FY 1990</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	24	\$11,197	24	\$10,886	24	\$3,250	21	\$2,987		
O&MN Install.	(25)	\$2,352	(24)	\$2,251	(24)	\$2,251	(24)	\$2,251	(24)	\$2,251

	<u>FY 1991</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			266	\$68,605
O&MN Install.	(24)	\$2,251		23,061
APN-6 Spares				2,573

GRAND TOTAL                      \$94,239

Installation Data: The wiring installation will be accomplished during the integrated configuration update of A-6E aircraft to the A-6E TRAM commencing with the induction of aircraft for this program in FY 1981. A-6E TRAM aircraft delivered prior to initiation of this modification will receive installation during scheduled Rewing (SLEP) conducted by the contractor in FY 1985 through FY 1990.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/AVA-1 Vertical Display Indicator (VDI) (OSIP 1-78)

Models of Aircraft Affected: A-6E/KA-6D

Description/Justification:

The Vertical Display Indicator (VDI) is a dynamic contact analog TV display, composed of easily identified ground and sky textures integrated with flight path presentations and other visual flight cues. The cues assist the pilot in flying the aircraft during takeoff, navigation, attack and landing. Through the use of this display the pilot is able to fly his aircraft under all conditions as though he were in actual contact flight.

The present VDI, the IP-727/AVA-1, was designed in the mid 1950's using the latest technology of that era. The circuit technology, reliability and maintainability are archaic by present day standards. The discrete components (resistors, capacitors, transistors, etc.) that make up this display are no longer available. Substitute components are not directly replaceable requiring extensive redesign when they must be substituted. Nonavailability of parts is escalating the cost of the unit while decreasing the already poor reliability and maintainability.

The proposed system is a direct replacement for all A-6 aircraft. Improved technology will increase the reliability from 50 hours to 400 hours and decrease the mean-time-to-repair from 5 hours to 1 hour. It will also provide increased brightness, accuracy and stability. The redesigned unit includes the capability to put FLIR video on the VDI and provides additional symbology for automatic carrier landing system (ACLS). Airframe wiring provisions for FLIR video will be installed during the TRAM retrofit program. Weight of the new unit will be 45 pounds vice 56 pounds of the current indicator. This equipment can be installed at organizational level.

Development Status: This equipment was developed using FY-75/76 AERMIIP funding. Four prototype indicators were built for test and evaluation. Development testing was completed in May 1978. Approval for service use was issued in February 1979.

OSIP 1-78

Project Financial Plan:

	<u>FY 1978</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	60	\$4,200	16	\$1,748	21	\$2,330	41	\$4,781
O&MN Install. ("O" Level)								-0-
APN-6 Spares		\$267						-0-

	<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	86	\$10,452	42	\$5,300	266	\$28,811
O&MN Install. ("O" Level)						-0-
APN-6 Spares						267

GRAND TOTAL \$29,078

Installation Data: This indicator is a direct replacement and will be installed at the organizational level. The wiring provisions for FLIR video will be included in the THAM retrofit program.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: APQ-156 Radar Improvement Program (OSIP 51-82)

Models of Aircraft Affected: A-6E

Description/Justification:

The APQ-156 radar is a complex state-of-the-art radar system providing a unique capability of simultaneous multi-mode operation giving the A-6E aircraft the sole capability of performing the all-weather attack mission. The APQ-156 has been approved for service use and is in full production. Because of its complexity and importance to the attack mission the APQ-156 radar is a major contributor to degraded readiness of the A-6E aircraft. These reliability and mission readiness improvements are the result of several years of engineering investigations and development. The following changes are the most cost effective ways of improvement. A 15 percent radar reliability improvement is expected along with many thousands of maintenance hours saved as a result of the incorporated changes.

1. Antenna/Receiver Modules - Manufacture of new direct replacement modules designed to improve maintainability/reliability by using fewer and more reliable components. Expected individual module improvements are as listed below:

	<u>Reliability MTHBF</u>		<u>Maintenance Annual Hours Saved</u>
	<u>Old</u>	<u>New</u>	
Amplifier (AFC)	756	15,126	3,588
Rcvr (TC)	1,323	6,762	1,641
Search/F Rcvr	701	7,315	3,377

2. BNCB, Fault Isolator Front Panel Toggle Switches - Approximately ten switch failures per month occur due to the bent and deformed bat handles caused by both maintenance and flight personnel. To replace one of the many panel switches the front panel must be disassembled. By designing a screw-on handle for each type of switch, approximately 5 hours can be saved for each failure by replacing bat handles at the organizational maintenance level instead of the entire switch at the intermediate level. Second to the antenna/receiver improvement in priority, this change will greatly improve aircraft readiness.

Development Status: The new designs for antenna/receiver modules and all nonrecurring, nonproduction engineering were accomplished by AERMIP funds and completed in February 1979. No development is required on the switches which are currently used on other military equipment.

OSIP 51-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	107	\$4,739	40	\$1,711	153	\$6,312	300	\$12,752
O&MN Install. "O" & "I" level				-0-				-0-
APN-G Spares		\$1,431		\$545		\$2,209		4,185
GRAND TOTAL								\$16,947

Installation Data: Installation will be by direct replacement of cards or switches at the intermediate/organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Rewing (SLEP) (OSIP 10-79)

Models of Aircraft Affected: A-6E

Description/Justification:

The A-6 all-weather attack aircraft was introduced in the Navy in 1963 and is still being produced. In 1972, the Navy initiated a Conversion-in-Lieu-of-Procurement (CILOP) program (OSIP 5-72) to convert the earlier models (A-6A) to the new production configuration (A-6E). The CILOP program completed in FY 1979 with the last of the A-6A's being converted. The aircraft has a 3,000-hour wing life which, depending on actual wing loading and utilization, equates to a service life of between 9 and 13 years. Heavy wing loadings and high 'g' maneuvers in combat have accelerated service life completions due to fatigue. Onboard accelerometers have been installed on all aircraft to verify the service life available. As a result, and in order to avoid degradation of Fleet readiness and maintain an adequate inventory of all-weather attack resources, it is necessary that those aircraft approaching their fatigue life limit be rewinged. This rewing effort will approximately double the original service life expectation of the aircraft. This program was originally funded in OSIP 5-72, A-6E Modification (CILOP) and has been continued under the A-6E configuration update, OSIP 9-77, and this OSIP since the CILOP program completed in FY 1979.

Development Status: Development complete.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.		\$3,297	11	\$11,490	15	\$18,073	22	\$31,542	15	\$26,646	25	\$41,782
APN-5 Install.		*										
Total APN-5		\$3,297		\$11,490		\$18,073		\$31,542		\$26,646		\$41,782
APN-6 Spares										-0-		

\* APN-5 installation of 12 wings and O&MN installation of 49 wings is included in OSIP 9-77.

Project Financial Plan (Cont'd):

NOTE: FY 1979 includes installation cost of rewiring kits previously procured in OSIP 5-72. The initial 64 kit installations are being performed in conjunction with A-6E CAINS/TRAM/CNI modifications (OSIP 9-77) under an integrated A-6E configuration update effort.

Installation Data: The rewing of A-6E aircraft is being conducted at the contractor's plant. The first 76 wing installations are being performed in conjunction with J6A to A6E Modification, the retrofit of TRAM/CAJNS/CNI systems and the backfit of TRAM equipments in an integrated A-6E configuration update program. Leadtime for the CFE kits is 24 months.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Combination Radio (AN/ARC-182) (OSIP 4-81)

Models of Aircraft Affected: KA-6D

Description/Justification:

The AN/ARC-182 combination radio is a new radio for all tactical aircraft. It provides VHF-FM (30-88MHz), VHF-AM (108-156MHz), VHF-FM (156-174MHz) and UHF-AM/FM (225-400MHz) secureable voice communications. Navy Decision Coordinating Paper W0661-CC approved the combination radio AN/ARC-182 for tactical aircraft, including KA-6D aircraft.

Development Status: The radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661CC. Approval for service use is scheduled for August 1982.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1*	\$165	22	\$1,488	40	\$2,608					63	\$4,261
O&MN Install.			(1)*	\$9	(9)	\$81	(36)	\$342	(17)	\$161		593
APN-6 Spares				\$347		\$470						817
GRAND TOTAL												\$5,671

\*Prototype.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by fleet mod team (FMT).

Appropriation: APN - Activity 5

Models of Aircraft Affected: A-6E

The AN/ARC-182 combination radio is a new radio for all tactical aircraft. It provides VHF-FM(30-88MHz), VHF-FM(108-156MHz), VHF-AM/FM(155-174MHz) and UHF-AM/FM (225-400MHz) secureable voice communications. Navy Decision Coordinating Paper WO661-CC approved the combination radio AN/ARC-182 for tactical aircraft, including A-5E aircraft.

**Project Financial Plan:**

	<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	85	\$6,430					299	\$22,511
O&MN Install.	(86)	\$386	(93)	\$419	(10)	\$43		1,336
APN-6 Spares								<u>821</u>
GRAND TOTAL								\$24,668

Installation Data: Installation will be accomplished during contractor rework and the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by NARF field mod teams.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Mission Recorder USH-17(V) and UPQ-5 Display Performance Improvement (OSIP 47-82)

Models of Aircraft Affected: A-6E

Description/Justification:

The USH-17(V) mission recorder was developed to simultaneously record the APQ-148 radar and A-6C TRIM electro-optical sensors. A-6C TRIM sensors provided TV format imagery and the recorder was designed accordingly. The current A-6E TRAM FLIR's unusual signal format requires precise video tape recorder (VTR) alignment to provide quality imagery and airborne playback. In view of the unique capability of the TRAM system and VTR to provide standoff target identification, intelligence data and bomb damage assessment, it is essential that improvements be made to the USH-17(V) recorder to provide consistent, high quality FLIR recordings. This modification will improve image quality and greatly reduce adjustments and maintenance manhours. The changes included are as follows:

a. Auto Tracking and Time Base Corrector (TBC). This change eliminates the need for alignment or manual adjustment of head tape penetration and phase tracking during playback and electronic synchronization of the display roster for improved image quality.

b. USH-17(V) Airframe Mounts. This change provides a new design VTR mount to replace the original aircraft racks. Failure of the isolator foam and structural problems with the existing rack requires frequent, costly repairs and reduces reliability.

UPQ-5 PGSE to support USH-17(V) will require related modification to provide hard copy imagery from video tape and to provide tape duplication capability.

Development Status: The automatic tracking and time base correction units have completed prototype design and breadboard testing and are similar to existing RCA equipment. Prototype disk recorders have been used throughout the TRAM development program and have proven of great value in early TRAM deployments. The tape duplicator mod is a minor change to three PCB's in the UPQ-5. Design of the new mount is complete. No further testing is required.

OSIP 47-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	271	\$1,370		\$2,601		\$1,316	271	\$5,287
O&MN Install.			(271)	\$208				208
APN-6 Spares		\$242		\$279		\$263		784
GRAND TOTAL								\$6,279

Installation Data: 1. The USH-17(V) auto tracking and the T3C: VTR units will be returned to the contractor for modification installation. 2. PCSE Mod: organizational level installation. 3. Tape Duplication: intermediate level installation of 3 PCB's. 4. Airframe mounts: organization level installation.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Aircraft Landing Gear Improvements (OSIP 13-79)

Models of Aircraft Affected: A-6E, KA-6D

Description/Justification:

The A-6E landing gear arrangement has had a history of problems in the nose downlock action and the main landing gear cylinder. The nose gear downlock arrangement will be modified to provide a redundant downlocking feature. This improvement provides a more positive downlock of the nose landing gear to insure protection of the TRAM Detecting and Ranging Set (DRS) turret when installed in the A-6E aircraft. The present system is powered only to unlock the nose gear and depends on springs to provide the over center action which effects a downlock condition. The improved system provides a double acting cylinder supplying positive power for both locked and unlocked conditions in addition to the springs.

The main landing gear cylinders, made of 7079-T6 aluminum alloy, have a history of failures and are installed in 100 A-6E (converted from A-6A) and KA-6D aircraft. Main landing gear cylinder material was changed to 7075-73 aluminum alloy in production aircraft. The 7075-73 material cylinders have demonstrated significant improvement. The old material cylinders will be replaced with new material cylinders during normal overhaul of the main landing gear.

Development Status: The main landing gear cylinder improvement is being incorporated in production aircraft. The nose gear improvement will be incorporated in conjunction with the TRAM installation.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	35	\$330	26	\$265	300	\$4,234	25	\$906	45	\$1,637
O&MN Install.					(60)	\$242 (211)		\$1,085	(40)	\$184
APN-6 Spares		\$73				\$456		\$355		\$355

OSIP 13-79

Project Financial Plan (Cont'd):

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	80	\$2,932					511	\$10,304
O&MN Install.	(61)	\$60	(82)	\$56	(57)	\$48		1,675
APN-6 Spares								<u>1,239</u>
GRAND TOTAL								\$13,218

\* Quantity represents kits vice aircraft.

Installation Data: Installation will be accomplished in A-5E during TRAM retrofit and during normal overhaul of landing gear. Installation of 234 Nose Gear units is included in OSIP 9-77 (CAINS/CNI/TRAM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A-6 Weapons Integration (OSIP 8-93)

Models of Aircraft Affected: A-6E

Description/Justification:

A variety of weapons and avionics subsystems are programmed for integration into the A-6E including stand-off air-to-ground weapons. The load carrying capacity, mission roles and aircraft capabilities indicate that additional systems will be programmed. To improve electronic management and systems control, common control units and management bus are required for reduction of weight and maintenance workload economy of available space, and to improve efficiency in control and data management. These improvements will include incorporation of a common control panel for projected weapons with growth for compatibility with other new weapons, and incorporation of multiplex bus capability for weapons management and to simplify incorporation of avionics systems projected for the A-6E.

Development Status: Development will be conducted under A-6E Weapons Integration RDT&E,N Program Element Number 24134N with development of integrated control panels and provisional approval for service use (PASU) by May 1983 to meet weapons integration requirements.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	18	\$6,294	60	\$12,356	90	\$20,182	102	\$25,131	270	\$63,963
O&MN Install. "O" Level		-0-								-0-
APN-6 Spares		\$1,021		\$2,841		\$4,792				\$8,654
GRAND TOTAL										\$72,617

Installation Data: Installation will be accomplished at the organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1982

Appropriation: APN - Activity 5

Modification Title and No.: Padar Data Converter Improvements (OSIP 9-83)

Models of Aircraft Affected: A-6E

Description/Justification:

The radar data converter (RDC) was designed in the early 1960's using the latest technology of that era. The improvement in components and the development of integrated circuits has led to the nonavailability of off-the-shelf replacement of components for the existing RDC. The analog system mechanization is subject to drift and requires frequent and time consuming interactive alignment to maintain the required performance. This new equipment will be a modification resulting in the incorporation of many reliability and maintainability improvements. Obsolete discrete analog circuits and components will be replaced with state-of-the-art digital mechanization. The number of parts will be reduced to less than half. Other improvements will consist of better automatic built-in-test fault detection and redesign to eliminate corrosion problems.

Development Status: A contract for RDC modification using AERMIIP funding was awarded to Kaiser Electronics in April 1980. Development will be complete in early FY 1982.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	\$1,751	108	\$7,156	108	\$7,341	43	\$3,068	269	\$10,315
Q&MN Install. "O" Level		-0-								-0-
APN-6 Spares		\$183		\$1,591		\$1,656		\$422		3,852
GRAND TOTAL										\$23,168

Installation Data: Installation will be accomplished by organizational level personnel. Installation time is approximately one hour.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-67 Receiving Set, Countermeasures (OSIP 10-83)

Models of Aircraft Affected: A-6E

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 and AN/ALR 50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CRT azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has been integrated with the ALQ-99/FA-6B and has successfully completed all required lab and ground testing prior to starting TECHEVAL. TECHEVAL should be completed in the second quarter of FY 1982 and OPEVAL started in the third quarter of FY 1982. Approval for service use is anticipated in the second quarter of FY 1983.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$9,055	30	\$14,453	98	\$49,573	123	\$63,847	17	\$6,633
C&MN Install.			(1)	\$59	(20)	\$1,254	(79)	\$5,062	(86)	\$5,534
O&MN Training		\$1,009								
APN-6 Spares				\$2,995		\$9,915				

OSIP 10-83

Project Financial Plan (Cont'd):

	<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5					269	\$143,561
O&MN Install.	(59)	\$3,741	(24)	\$1,505		17,155
O&MN Training						1,009
APN-6 Spares						<u>12,910</u>
GRAND TOTAL						\$144,635

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and during contractor modification at Grumman.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Stand-off Air-to-Ground Weapons (OSIP 5-84)

Models of Aircraft Affected: A-6E TRAM

Description/Justification:

I<sup>2</sup>R HARPOON improves the existing HARPOON missile by providing for data link control and imaging infrared (IIR) seeker. The improvements enhance survivability of the missile and increase terminal accuracy. In addition, the I<sup>2</sup>R seeker permits greater selectivity through improved target identification and discrimination capability. The I<sup>2</sup>R HARPOON integration with A-6E TRAM utilizes the WALLEYE II data link pod mounted on the A-6 centerline bomb station for communication with the missile, incorporates I<sup>2</sup>R HARPOON video on existing A-6E TRAM display and requires MUX Bus link to captive missile and a data link control panel.

Development Status: RDT&E is being conducted under the HARPOON project (PE 63369). Initial missile launches, provisional approval for service use (PASU) for the A-6 system and TECHEVAL are programmed for FY 1983. If the I<sup>2</sup>R HARPOON program should be replaced by another stand-off air-to-ground weapon program, the aircraft integration requirements are not expected to differ significantly.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	15	\$5,700	60	\$13,261	90	\$21,404	105	\$22,195	270	\$62,664
O&MN Install. "O" & "I" Level		-0-								-0-
APN-6 Spares		\$1,079		\$2,461		\$3,875				7,415
GRAND TOTAL										\$70,079

Installation Data: Installation will be accomplished at intermediate and organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ICAP II (OSIP 12-81)

Models of Aircraft Affected: EA-6B

Description/Justification:

The ICAP II change will modify the expanded capability EA-6B aircraft to improve jamming techniques, flexibility and frequency coverage, enhance survivability in close support via cooperative countermeasures, improve reliability and maintainability, and improve the onboard computing capacity to accommodate the growth of the tactical jamming system. The update of the tactical jamming system (TJS) centers on a multiband exciter which provides multiple cockpit programmable jamming modulations over all frequency bands. Onboard computing capacity is achieved through replacement of the existing 4 Pi computer with the Navy standard computer AN/AYK-14, which provides increased memory and processing speed. An onboard program loader will be incorporated allowing the operator to perform inflight loading or changing of mission as well as maintenance tapes. This modification also includes installation of an automatic carrier landing system (ACLS); an updated communications/navigation and intercommunications (CNI) system; an improved defensive electronic countermeasures system (ALQ-126); and all other modifications previously approved for FY 1975 and subsequent ICAP production aircraft, which will standardize aircraft configuration and minimize support requirements.

Development Status: Provisional approval for service use is expected in November 1981 after completion of Contractor/Navy Qualification/Technical Evaluation. Approval for service use is scheduled for April 1982.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1*	\$3,064	7	\$12,611	7	\$17,047	5	\$10,708		
O&MN Install.					(5)*	\$10,699	(6)	\$16,004	(6)	\$16,004
O&MN Training				\$900						
APN-6 Spares		\$1		\$5,428		\$5,307				

\*Includes one prototype.

OSIP 12-81

Project Financial Plan (Cont'd.):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			20	\$ 43,430
O&MN Contr. Install. (3)		\$7,002		49,709
O&MN Training				900
APN-6 Spares				<u>10,736</u>
GRAND TOTAL				\$104,775

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ALQ-99 Pods (OSIP 19-79)

Models of Aircraft Affected: EA-6B

Description/Justification:

The refurbishment of existing pods will increase operational capability and system readiness, and enhance flight safety. During 1976/1977, 60 unsatisfactory reports (UR's) were generated due to ALQ-99 pod anomalies. These improvements will reverse this trend and will lessen significantly the damage to pod components which occurs due to circuitry malfunction. Typically arcing damage of this type requires more than \$300,000 for repair of each pod at the depot. Timely address of ALQ-99 anomalies will impact life cycle cost and operational readiness very favorably. Major improvements will include the multi-band exciter which will improve exciter reliability by replacing obsolete voltage controlled oscillators (VCO's) with EP-111A common pig tuned devices (YTD's) and the transmitter reliability improvement program which updates band 7 transmitters to the latest configuration.

This program will procure additional ALQ-99 jammer pods. These assets are required because of current shortages, requirements of the U.S. Marine Corps (upon acquisition of the EA-6B), threat spectrum revision, and reliability/maintainability improvements in existing pods. Expansion of the EA-6B inventory, due to current production, requires additional pod production to support increased aircraft inventories.

Development Status: Development is complete.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	3	\$1,773	59	\$18,407	59	\$18,952	65	\$6,222	47	\$21,562
O&M/ Install.							(4)	\$42	(24)	\$269
APN-5 Spares				\$226		\$1,522		\$987		\$2,772

OSIP 19-79

Project Financial Plan (Con't):

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	56	\$26,054	63	\$34,072					372	\$129,142
O&MN Install.	(72)	\$807	(84)	\$942	(96)	\$1,076	(92)	\$1,031		4,167
APN-6 Spares		32,618		33,412						<u>11,507</u>
GRAND TOTAL										\$144,716

Installation Data: ALQ 99 pod update will be accomplished at the ALQ-99 depot at Naval Weapons Support Center (NWSC) Crane, Indiana or by the contractor. Any additional pods will be purchased GFE.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Defensive Electronic Countermeasures (DECM) Improvement (OSIP 57-70)

Models of Aircraft Affected: EA-6A

Description/Justification:

The DECM system presently installed in the EA-6A aircraft is archaic, unsupportable, and unreliable. Moreover, the frequency coverage of the present system is inadequate for the modern battle scenario. The incorporation of the AN/ALR-45/50 and the AN/ALQ-126 will provide significantly enhanced self-protection to the EA-6A aircraft and flight crew. This installation of a Navy standard deception system will make the EA-6A logistically compatible with A-6 series aircraft and will provide an improved support posture over the system currently installed.

Development Status: The AN/ALR-45/50 and the AN/ALQ-126 have been approved for service use and are being used in operational aircraft.

Project Financial Plan

	<u>FY 1981</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1*	\$1,480	8	\$2,509	8	\$3,448	2	\$2,123			19	\$ 9,560
O&MN Install.			(1)*	\$72	(4)	\$265	(9)	\$544	(5)	\$358		1,360
O&MN Training						\$100						100
APN-6 Spares				-0-								-0-
GRAND TOTAL												\$11,020

\*Prototype

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team (FMT).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Signal Data Converter (SDC)/Inertial Navigation System (INS) Improvement (OSIP 14-81)

Models of Aircraft Affected: EA-6B

Description/Justification:

This is a combined effort to install the AN/ASN-123 signal data converter (SDC) and the AN/ASN-130 inertial navigation system (INS) in the EA-6B ICAP aircraft. The SDC weapon replaceable assembly (WRA) is the highest failure component. Alone it accounts for 20 percent of all system failures. Despite the incorporation of eight separate engineering improvements, reliability is still not adequate to support minimal readiness standards. Also, the maintainability factors preclude improvements with existing equipments. This effort will provide for installation of the AN/ASN-123 navigational display system presently installed in the SH-3 helicopter.

The AN/ASN-130 inertial navigation system (INS) is a modern, accurate navigation system that will replace the present dead-reckoning doppler navigation system currently installed in the EA-6B. The doppler navigation system has not proven to be reliable and fails to provide the necessary accuracy for more effective employment of the EA-6B weapon system. The AN/ASN-130 is being installed in the EA-6B/F-18 production aircraft. This commonality will provide improved integrated logistic support, thereby enhancing system readiness while providing greatly increased operational effectivity.

This combined effort will reduce total installation cost while at the same time measurably enhance reliability, improve readiness and lesson life cycle cost requirements.

Development Status: This installation will be a retrofit application of the existing ASN-123 with a form-fit-function installation developed by Grumman. The ASN-123 is approved for service use. The AN/ASN-130 will receive provisional approval for service use in the third quarter of FY 1982 and will be incorporated in FY 1981 production aircraft.

OSIP 14-81

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,148	22	\$11,660	23	\$13,287	22	\$12,274	10	\$6,400		
O&MN Install.					(8)	\$636	(23)	\$1,518	(23)	\$1,934	(18)	\$1,461
O&MN Training				\$50								
APN-6 Spares				\$651		\$1,391		\$1,462				

	<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			77	\$45,469
O&MN Install.	(5)	\$397		6,406
O&MN Training				50
APN-6 Spares				<u>3,504</u>
GRAND TOTAL				\$55,429

Installation Data: Installation will be accomplished by the contractor during Standard Depot Level Maintenance (SDLM)/Update and by contractor field mod team (FMT).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: AFN - Activity 5

Modification Title and No.: EA-6A Weapons System Update (ALQ-76/86) (OSIP 13-81)

Models of Aircraft Affected: EA-6A

Description/Justification:

The present EA-6A weapon system is a manually operated electronic countermeasures system (ECM) which has been degraded due to length of service life. The present system has the potential of being a viable asset in the electronic warfare environment if the passive and active systems are updated to function as they were originally intended to do. Contemplated improvements to the AN/ALQ-86 passive ECM system and the AN/ALQ-76 active system are as follows:

a. ALQ-76: Incorporation of the reliability and maintainability (R&M) improvements as well as minor changes to the present system will provide increased jammer power output and allow the operator greater ease of integrating jammer status and control with the ALQ-86 panoramic indicator.

b. ALQ-86: Improved reliability and maintainability, and update of the ALQ-86 passive receiver system will provide increased clarity, operator controllability and flexibility of the present system.

Development Status: R&M improvements have been identified by the Pacific Missile Test Center (PMTTC). Due to outdated components, producibility of replacement items is no longer feasible. Testing will be accomplished at the Naval Air Test Center by follow-on test and evaluation.

Project Financial Plan

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$4,320	1	\$7,715	6	\$8,603	5	\$7,737	7	\$8,942
C&MN Install.					(1)	\$168	(5)	\$840	(5)	\$840
O&MN Training				\$30		\$500				
APN-6 Spares				\$1,302		\$1,259		\$1,053		\$398

OSIP 13-81

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			19	\$37,317
O&M Install.	(8)	\$1,344		3,192
J&MN Training				550
APN-6 Spares				<u>4,012</u>
GRAND TOTAL				\$45,071

Installation Data: Installation will be accomplished by assembly of components at PMTC/NAC and contractor. The airframe change (AFC) will be installed by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and field mod team (FMT).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-182 Combination Radio (OSIP 11-81)

Models of Aircraft Affected: EA-6A/B

Description/Justification:

The AN/ARC-182 combination radio is a new radio designed for use in all tactical aircraft. This system will allow for secure voice communications for VHF-FM (30-88 MHz), VHF-AM (108-156 MHz), UHF-AM/FM (225-400 MHz). The form factor of the AN/ARC-182 is the same as the AN/ARC-159 UHF-VHF radio, and measures 200 cubic inches with a weight of 10 pounds. A single broadband aircraft antenna is included which is interchangeable with antenna installation provisions for the AN/ARC-175 radio.

The AN/ARC-182 installation will provide commonality and improved functional capability, thereby enhancing operational capability and system readiness. The Navy Decision Coordinating Paper W0661-CC approved the AN/ARC-182 for use in tactical aircraft, including the EA-6 aircraft.

Development Status: The radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661CC. Approval for service use on the radio is expected in September 1982.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$906	23	\$1,504	45	\$2,776	27	\$1,595					96	\$7,031
O&MN Install.			(1)	\$10	(14)	\$133	(43)	\$410	(38)	\$362				915
O&MN Training						\$125								125
APN-6 Spares				\$380		\$465								845
GRAND TOTAL														\$8,916

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) field teams and during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-67 Receiving Set, Countermeasures (OSIP 13-83)

Models of Aircraft Affected: EA-6B

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 and AN/ALR-50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CRT azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has been integrated with the ALQ-99/EA-6B and has successfully completed all required lab and ground testing prior to starting TECHEVAL. TECHEVAL should be completed in the second quarter of FY 1982 and OPEVAL should start in the third quarter of FY 1982. Approval for service use is anticipated in the second quarter of FY 1983.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$5,923	16	\$10,745	47	\$24,312	22	\$8,717		
O&MN Install.					(13)	\$568	(24)	\$1,056	(24)	\$1,056
O&MN Training		\$964								
APN-6 Spares				\$1,534		\$4,862				

OSIP 13-83

Project Financial Plan (Cont'd):

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			85	\$49,697
O&MN Install.	(24)	\$1,060		3,744
O&MN Training				964
APN-6 Spares				<u>6,326</u>
GRAND TOTAL				\$60,801

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by contractor mod line.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Installation of Supplemental Cooling Turbine (OSIP 14-83)

Models of Aircraft Affected: EA-6B

Description/Justification:

The purpose of this modification is to provide for improved reliability and maintainability of the cooling capability needed to meet airflow demands in the avionics equipment bay. Existing cooling air is insufficient to cool present electronic equipment while the aircraft is operating on the deck. Future additional electronic equipment such as the ASN-123 will create a further deficiency in cooling air. The additional cooling turbine will increase the cooling flow at altitude from 25 pound/minute to 50 pound/minute. The ground idle cooling capability will be increased from 18 pound/minute to 36 pound/minute, providing sufficient airflow for present and future needs.

Development Status: This change will be incorporated in the FY 1982 production aircraft. Approval for service use is not required; the change will be verified by contractor ground and flight test. No additional technical evaluation or operational testing is required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-;		\$3,269	26	\$1,620	28	\$1,834	24	\$1,549		
O&MN Install.					(13)	\$627	(27)	\$1,301	(26)	\$1,253
APN-6 Spares		-0-		\$234						

OSIP 14-83

Project Financial Plan (Cont'd):

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			78	\$ 8,372
O&MN Install.	(12)	\$578		3,759
APN-6 Spares				<u>234</u>
GRAND TOTAL				\$12,365

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of AYA-6 Computer with AYK-14 (OSIP 15-83)

Models of Aircraft Affected: EA-6B ICAP

Description/Justification:

This change will replace the AYA-6 computer in the ICAP version of the EA-6B with the AN/AYK-14 computer presently being qualified in the ICAP II version of the EA-6B. This substitution will require minor aircraft modification including the computer interface unit and modification to the tactical software used in the ICAP II EA-6B. The AYA-6 computer has been high on the EA-6B readiness degradation list since 1977. Further, the AYA-6 is extremely limited in core size (32k) with no reserve for future planned growth. Its replacement with the AN/AYK-14 should significantly improve readiness through increased reliability and better support. In addition, it will provide commonality with Fleet-wide aircraft.

Development Status: Development is complete.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	18	\$11,543	19	\$6,038	22	\$7,348				
O&MN Install.					(16)	\$176	(16)	\$176	(20)	\$221
APN-6 Spares		\$172		\$191						
	<u>FY 1988</u>		<u>TOTAL</u>							
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>						
APN-5			59	\$24,929						
O&MN Install.	(7)	\$77		650						
APN-6 Spares				363						
GRAND TOTAL				\$25,942						

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).  
1-145



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EA-6A Radar (APS-130) (OSIP 53-82)

Models of Aircraft Affected: EA-6A

Description/Justification:

Currently, the APQ-103 radar group constitutes one of the highest readiness degradations in the EA-6A. This characteristic results from the obsolete tube type design; which is a direct derivation from the A-6A APQ-97 fire control weapon system. In addition, the wiring of the radar system is old and has deteriorated through age and use. Further, with the removal of the A-6A, and its replacement by the A-6E, and with the retrofit of the APS-130 into the EA-6B, the logistic support posture of the APQ-103 becomes untenable. Retrofit of the APS-130 into the EA-6A will increase the mean time between failure (MTBF) by a factor of five. This improvement is essential due to the importance of the search radar in determining aircraft positioning (as retrofit of an inertial navigation system (INS) is not contemplated). Additionally, maintainability will be massively increased due to reinstitution of commonality with the A-6E/EA-6B radar systems.

Upon installation of the APS-130 radar in the EA-6A, a total rewiring of the forward pallet will be accomplished. Additionally, the ASN-200 doppler system will replace the APN-153 doppler.

Development Status: APS-130 and ASN-200 are approved for service use.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	8	\$3,822	6	\$4,800	5	\$4,000					19	\$12,522
O&MN Install.					(8)	\$572	(6)	\$430	(5)	\$353		1,360
O&MN Training		\$190		-0-								190
APN-6 Spares		\$624		\$247								871
GRAND TOTAL												\$15,043

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team (FMT).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Improvement of Fuel Quantity Gaging System (OSI 9-42)

Models of Aircraft Affected: A-7C/E and TA-7C

Description/Justification:

The 3M service data indicates that the fuel quantity indicator system wiring and connectors are the primary contributors to the reliability degradation of the A-7 fuel quantity gaging system. The proposed program will: (a) improve indicator by eliminating glass breakage, eliminate failures in adjustment section, and reduce requirement for system recalibration; (b) improve wiring by increasing abrasion resistance, providing greater flexibility, providing centralized test and fault isolation, and elimination of shield jumper terminations; and (c) improve electrical connectors by reducing corrosion, providing better moisture seals, shielded contacts, and improved coupling. This improvement will greatly enhance aircraft reliability through at least 1990 when they will be used by reserve squadrons. Contractor test will consist of ground testing and integration of all related systems. Navy test will consist of ground and flight test for verification.

Development Status: No development required. This modification utilizes existing state-of-the-art techniques.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	\$1,891	40	\$3,022	150	\$2,546					194	\$ 7,459
O&MN Instal.					(4)	\$129	(40)	\$840	(150)	\$3,149		\$ 4,118
APN-6 Spares		\$12		\$289		\$100						701
GRAND TOTAL												\$12,278

Installation Data: Installation will be accomplished by Naval Air Warfare Facility (NAWF) field mod teams and during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/APQ-126 Radar Sec and AN/ASN-90 Inertial Measurement Set Update (IMU) (OSIP 10-82)

Models of Aircraft Affected: A-7E/C, TA-7C

Description/Justification:

The ASN-90 inertial measurement unit (IMU) is number 2 on the readiness improvement summary evaluation (RISE) report. The adapter/power supply unit is the major degrader to reliability. Within the power supply unit, cards #1 and #4 will be modified to improve short circuit protection, reduce the number of components, and utilize updated state-of-the-art technology to improve component reliability.

Development Status: IMU development and testing is being accomplished via an AERMIP program. These tests will be performed in accordance with MIL-I-6181D (EMI Testing), MIL-T-5422 (Vibration Testing), MIL-T-5422E (Temperature Testing) and MIL-STD-71A (Demonstration Test). An Engineering Change Proposal (ECP) is expected in NAVAIR in March 1982.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	74	\$2,452	114	\$2,769	102	\$2,064	290*	\$7,285
O&MN Install. ("I" Level)		-0-						-0-
APN-6 Spares		\$662		\$1,009		\$826		2,497
GRAND TOTAL								\$9,782

\*Component kits.

Installation Data: Rework will be done at time of component repair at intermediate level. The change will be incorporated at depot level during repair.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: I<sup>2</sup>R MAVERICK Airframe Provisions (OSIP 11-92)

Models of Aircraft Affected: A-7E (FLIR Configured)

Description/Justification:

The MAVERICK missile is an air-to-ground missile whose primary mission is to provide a high probability of kill against surface targets during war-at-sea strikes and small hard targets during close air support and interdiction strikes. The MAVERICK missile will provide considerably greater stand-off range for enemy engagement than with present conventional weapon capability.

Retrofit of MAVERICK capability into FLIR configured A7E aircraft will require integration with the TC-2A computer, multiple munitions wiring (MMW), head-up display (HUD), ArQ-126, armament station controller (ASCU), and WALLEYE wiring and stiff stick controller. A digital encoder and decoder will be required for MAVERICK seeker head slew capability. Single Rail Launchers (LAU-117) will also be procured in support of the missile.

Development Status: The USAF has flown the I<sup>2</sup>R MAVERICK Missile on the F-4 aircraft. Procurement of the A-7E/MAVERICK provisions will be the first introduction of the MAVERICK missile for Navy Use. Navy Tests (DT&E) began in August 1980 and were completed the third quarter of 1981. OPEVAL is scheduled in the third quarter of 1982. Provisional approval for service use for the A-7E aircraft and the Navy MAVERICK Missile is expected in October 1982; approval for service use is expected in 1983. First procurement of I<sup>2</sup>R MAVERICK missiles will be in FY 1984.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$1,818	24	\$7,317	50	\$15,578	50	\$15,705	50	\$15,593		
O&MN Install.			(2)	\$17	(12)	\$102	(50)	\$421	(50)	\$421	(50)	\$421
APN-6 Spares		\$86		\$1,237		\$2,360						

OSIP 11-82

Project Financial Plan (Cont'd):

	<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			176	\$54,011
O&MN Install.	(12)	\$101		1,483
APN-6 Spares				<u>3,693</u>
GRAND TOTAL				\$59,177

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and by field mod team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: TF-41 Engine Hot Section Extended Life Program (HELP) (OSIP 16-81)

Models of Aircraft Affected: A-7E

Description/Justification:

Component improvements, previously designed and tested to assure achievement of a 500-hour non-derated hot section repair capability (Lead the Fleet Component - HPT-1 Vane), began service incorporation April 1979. Incorporation of further hot section and control component redesigns are required to improve operational readiness, to reduce the risk of critical turbine part failure, minimize the cost of ownership, and provide the capability to maintain engine performance throughout a 1000-hour service interval. These hardware changes will collectively restore the TF-41 engine to cost effective levels of reliability and performance by increasing turbine durability and reducing peak hot section temperatures. State-of-the-art technology and greater contractor expertise are reflected in these redesigns.

Improved operational readiness will be attained by increasing the availability of the TF-41 engine. The engine configuration resulting from the Lead the Fleet ("LTF") program (OSIP 4-78) will require hot section refurbishment (engine disassembly) at 500-hour intervals due to HPT-1 vane distress and relatively low life limited components within the high pressure turbine section. The causes of the distress and relatively low life limits are high peak temperatures produced by the existing combustors, basic design of the existing HPT-1/-2 blade attachments, insufficient HPT-1/-2 blade airfoil capability to withstand even limited elevated temperature exposure, metal cooling capability of even the "LTF" bullnose HPT-1 vane configuration, and an inefficient electronic control (LTA) which does not effectively limit transient temperature overshoots and is adversely affected by common mode noise input to the T5.1 circuits. Because of these problems, the currently approved configuration hardware is life limited as follows; "HPT-1 vane - 500 hours ("LTF" component); HPT-1/-2 blades - 1000 hours (not addressed by "LTF"); and HPT-1/-2 wheels - 2500 hours (not addressed by "LTF"). The cost and resultant operational readiness impact as a result of these relatively low life limits of the current configuration are inherently high.

This modification program addresses the above deficiencies with kits A through D. Kit A provides a three-lobe serration HPT-1 cast blade with a 1000-hour minimum airfoil life and an HPT-1 wheel with a 6000-hour life limit. Kit B provides a three-lobe serration air-cooled HPT-2 blade with a 3000-hour life and an HPT-2 wheel with a 6000-hour life limit. Kit C provides a HPT-1 vane of two-compartment design with single airfoil segments which effectively utilize film-cooling to lower the vane metal temperatures by 400°F thus providing a minimum of 1000 hours of life. Kit D provides for an Engine Monitoring System (EMS) which continuously defines engine health status, hot section component usage, and performance characteristics to ensure early detection of engine discrepancies and to improve maintenance effectiveness.

OSIP 16-61

Description/Justification (Cont'd):

The improvements provided by this program combined with development efforts which began incorporation in April 1979 ("LTP") will result in a TF-41 engine with a 1000-hour refurbishment interval, a projected inherent premature removal rate of less than 2.0 per thousand hours, and a projected combined inherent premature removal rate of 4.0 per thousand hours. This modification program will extend the useful life of the high pressure hot section components thereby reducing inspection requirements and replacement parts costs. These improvements will provide additional turbine temperature capability. This capability can be used to maintain engine performance following prolonged operation by permitting depreciation recovery as required. The EMS will provide the engine component life usage tracking and performance degradation trend capabilities required by the CNO directed Navy-wide Engine Analytical Maintenance Program (EAMP). These capabilities coupled with the EMS ability to increase troubleshooting will improve aircraft availability, reduce unnecessary engine and component removals, decrease secondary material damage, increase logistics support effectiveness, and extend useful engine operational life. The result of this total modification program will be a cost effective end item with improved reliability and combat readiness with significantly reduced logistics costs.

Development Status: Kit A and B development is complete. Kit C is in the final design stage and verification testing began in July 1979 with ECP submittal expected in September 1981. Kits A through D are being developed such that each kit can be incorporated as an individual entity. Development of the basic EMS provided for by Kit D is complete but minor modifications to improve reliability are being requalified. A revised ECP for Kit D is anticipated in March 1982.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$7,512		\$13,785		\$27,607		\$30,135		\$36,175
O&M Install.				\$34		\$522		\$1,194		\$3,630
APN-6 Spares		\$2,255		\$2,301		\$4,505		\$1,716		

OSIP 16-81

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5				\$115,314
O&MN Install.		\$3,644		9,024
APN-6 Spares				<u>10,775</u>
GRAND TOTAL				\$135,113

\*See Basis for Cost Estimate for quantity of kits.

Installation Data: Kits A and B will be incorporated during scheduled engine/HPT rotor repair at depots. Modified HPT rotors will be installed at depots and IMA's. Kit C will be incorporated during scheduled engine repair at depots and IMA's. Kit D will be incorporated during scheduled engine repair at the depots, during scheduled aircraft Standard Depot Level Maintenance (SDLM), and by the Naval Air Rework Facility (NARF) field mod team as appropriate.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: HARM (OSIP 13-80)

Models of Aircraft Affected: A-7E (with FLIR Provisions)

Description/Justification:

Retrofit of HARM capability into FLIR configured A-7E aircraft will require interface with the TC2A computer, multiple munitions wing wiring (MMW), head-up display (HUD), APQ-126 and existing armament station control unit (ASCU). In addition, retrofit modification to LAU-118 launchers to provide HARM capability will be required in sufficient quantities to support A-7E/HARM aircraft deployments. This modification will provide the necessary nonrecurring effort for retrofit of HARM capability into the A-7E, procure modification kits and HARM peculiar avionics for retrofit, and provide the nonrecurring and procurement of modified kits for the AERO 5 launcher for retrofit. The HARM peculiar avionics designated AWG-25 consists of the Command Launch Computer (CLC) and the Control Indicator (CI). The CLC is about 236 cubic inches and will be installed in the A7E avionics bay. The CI will replace the existing Radar Warning Receiver (RWR) control panel in the cockpit and will perform both HARM and radar warning receiver (RWR) functions. In addition, the HARM avionics will interface with the APR-43 and ALR-45F replacement processor which are being provided for A7E installation under a separate program (OSIP 26-79).

Development Status: A DSARC II was held in February 1978 which directed the HARM program to proceed to full-scale engineering development and allowed use of procurement funds prior to provisional approval for service use (PASU) or approval for service use (ASU) for limited production. A DNSARC IIB was held in October 1980 to determine readiness to proceed to limited production with initial procurement funds. Missile NTE is complete and CPEVAL will complete in July 1982. ASU is planned by the third quarter of FY 1982 and DSARC III approval to proceed to full production is planned by September 1982. SECDEF Memo of 23 Mar 1978 authorized deviation from normal DOD Directives 5000.1 and 5000.2 policy.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	24	\$17,194	44	\$25,100	24	\$14,633	32	\$15,055		
O&MN Install.					(24)	\$956	(44)	\$1,247	(24)	\$754
O&MN Training				\$50		\$50		\$50		\$50
APN-6 Spares		\$1,757		\$2,000		\$7,970				

OSIP 13-80

Project Financial Plan (Cont'd)

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			124	\$71,982
O&MN Install.	(32)	\$791		3,748
O&MN Training				200
APN-6 Spares				<u>11,727</u>
GRAND TOTAL				\$87,657

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Digital Scan Converter for AN/APQ-126 Radar (OSIP 15-80)

Models of Aircraft Affected: A-7E/TA-7C

Description/Justification:

The sweep generator and direct view storage tube of the APQ-126 radar will be replaced by a digital scan converter (DSC) and a cathode ray tube (CRT) indicator. Together, this system is called the digital scan converter group (DSCG). These new units are installed in the TA-7C aircraft and are form-fit-function compatible with the old units. Specified MTBF of the DSCG is 500 hours and will improve the reliability of the APQ-126 system by 45 percent, from 45 to 70 hours. Maintainability will be improved as there are no "O" level adjustments. The installation of the DSCG in the A7E aircraft incorporates advanced features which include operational improvements in weapons delivery, beacon bombing, FLIR/WALLEYE display options and allowing the radar to be silenced while keeping a dead-reckoning track of target position.

Development Status: These items are common to those installed in the TA-7C. TECHEVAL was completed in March 1978 and OPEVAL was completed in September 1978. Operational assessment by VX-5 of the digital scan converter installed in an A-7E was completed in March 1979.

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$4,307	100	\$9,622	116	\$12,358	63	\$6,861			288	\$33,148
O&MN Install.			(9)	\$61	(100)	\$366	(116)	\$424	(63)	\$231		1,082
APN-6 Spares		\$248				-0-						248
GRAND TOTAL												\$34,478

Installation Data: Installation will be by contractor field mod team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Automatic Maneuvering Flap (AMF) (OSIP 17-80)

Models of Aircraft Affected: A-7B/E, TA-7C

**Description/Justification:**

This proposal adds an automatic maneuvering flap (AMF) to the A-7 and TA-7C aircraft. The new system provides for automatic extension and retraction of both leading and trailing edge flaps based on angle-of-attack and airspeed. Changes will be made in the flap system, angle-of-attack transducer, automatic flight control system (AFCS), and aileron/rudder interconnect. A new electric control unit will provide signals to actuate the flap system.

Development Status: The USAF has flown two modified production A-7D aircraft for over 600 flight hours with AMF installed without a single failure or malfunction. A full A-7D retrofit program started in February 1979. Fourteen aircraft have been completed and are flying with no complaints. The Navy has completed a high angle performance test in A-7 (E-573) at LTV and has tested landing configuration patterns and spin characteristics with AMF installed at the Naval Air Test Center, Patuxent River. All tests were completed successfully.

**Project Financial Plan:**

	FY 1980		FY 1981		FY 1982		FY 1983		FY 1984	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	71	\$5,154	107	\$5,800	116	\$6,385	72	\$3,982	34	\$3,144
O&M Install.			(28)	\$1,506	(119)	\$3,311	(116)	\$2,901	(72)	\$1,802
APN-6 Spares		\$442		\$457				-0-		

	<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	62	\$3,795			482	\$28,260
O&MN Install.	(66)	\$1,651	(81)	\$2,026		13,197
APN-6 Spares						899
GRAND TOTAL						\$42,356

Installation Data: Installation will be accomplished by contractor drive-in and field mod teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: AFN - Activity 5

Modification Title and No.: WALLEYE Extended Range Data Link (ERDL) Anti-Jam and Multiple Carriage (OSIP 18-80)

Models of Aircraft Affected: A-7E

Description/Justification:

A data link command receiver and a data link video transmitter, antenna, and associated equipment, have been developed, installed, and tested in WALLEYE weapons. An FY 1973 production quantity of 45 such WALLEYE weapons was produced and used for NTE, OPEVAL, and Fleet inventory. WALLEYE engineering model pods and controllers were used to support the data link WALLEYE NTE and OPEVAL. A-7 is the only operational WALLEYE capable carrier based aircraft. The data link WALLEYE weapon requires a corresponding aircraft data link to transmit guidance commands and to receive video signals from the WALLEYE weapon after it is launched from the aircraft and on its way to the target. This operation permits the launching of WALLEYE from aircraft at a target complex from a considerably greater stand-off range than at present and enables refinement of the weapon's lock-on point to the desired target point as the weapon nears the target. Rather than install this data link equipment in all or certain specified A-7 aircraft, it will be housed in a pod to be carried on an A-7 bomb rack with an umbilical connection to the aircraft. These data link pods are a requirement for Fleet A-7 aircraft. The controller (stiff stick) installation is being retrofitted in all A-7E's as it is the initiator of the data link signals.

The data link weapon improvement program was initiated to provide a weapon anti-jam harden capability. A cockpit switch and an AN/AWW-9 pod are required, and the existing A-7E avionics peculiar ground support equipment (PGSE) requires updating to handle the existing and hardened weapon. This extra capability will reduce the possibility of threat radars and enemy jamming devices jamming the data link. It will increase the command transmitter power to provide improved performance and greater range capabilities. This change also improves the maintainability and reliability of the pod transmitter and transmitter power supply.

Development Status: The WALLEYE data link capability was developed under a WALLEYE Rapid Development Capability (RDC). The Naval Avionics Center, Indianapolis, Indiana, has designed and fabricated this equipment. The testing has been completed at the Naval Weapons Center, China Lake. OPEVAL completed in July 1973. The equipment was released for service use in January 1974. A7E aircraft equipped with extended data link systems are operating on board Fleet aircraft carriers stationed in the Pacific and Atlantic Oceans. The "harden" link completed testing at NWC, China Lake during the first quarter of FY 1980. WALLEYE weapon system equipment will be approved for service use (ASU) in March 1982.

OSIP 18-80

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	75	\$3,622	75	\$4,579	75	\$3,051	52	\$5,403		\$4,975
O&MN Install.*	(25)	\$97	(75)	\$293	(75)	\$331	(75)	\$331	(75)	\$331
APN-6 Spares		\$962		\$911		\$589				

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$2,785	277	\$24,415
O&MN Install.	(27)	\$119		1,502
APN-6 Spares				<u>2,462</u>
GRAND TOTAL				\$28,379

\* 75 additional AFC Kits shown for installation were procured under a former WALLEYE program (OSIP 3-75).

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and N.: A-7E FLIR (OSIF 23-79)

Models of Aircraft Affected: A-7E and TA-7C

Description/Justification:

The A-7E FLIR subsystem was developed in accordance with SOR W11-96 to provide pilots a passive night vision capability and to enhance the weapon delivery accuracy of the A-7E during night operations. A Forward Looking Infrared (FLIR) set, mounted in a wing pod, is used in the FLIR subsystem to generate thermal imagery for classification, identification and visually aided attack of sea and land targets. The FLIR wing pod contains a video signal mixer (a new unit of the HUD (Head-Up Display)), provisions for a video tape recorder and an air-conditioner for cooling the pod avionics. The FLIR imagery and attack situation symbology are combined, in the video signal mixer, for viewing by the pilot on the modified cockpit HUD. Thus, FLIR provides the A-7E a first-pass visual attack capability at night with a bombing accuracy two times better than that which can be achieved by pure (blind) radar weapon delivery.

This modification extends the current FLIR program for production of new A-7E FLIR-equipped aircraft by (1) retrofitting FLIR provisions (wiring, controls, new computer, and modified HUD) into 160 existing Navy A-7E Fleet aircraft, and 12 TA-7C trainer aircraft, (2) providing 109 FLIR wing pods, and (3) providing video recorders for the FLIR subsystems. The FLIR subsystem has a total weight of 720 pounds and is 16-cubic feet in volume. Fifty-seven production aircraft (FLIR configured) are operating in the Fleet.

Development Status: All developmental testing was completed in February 1979. Approval for service use was granted in August 1979.

OSIP 22-79

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	41	\$37,090	41	\$27,161	27	\$15,865	21	\$16,152	21	\$19,789
APN-5 Install.	(41)	1,863								
Total APN-5		\$38,953		\$27,161		\$15,865		\$16,152		\$19,789
O&MN Install.					(15)	\$1,001	(38)	\$2,750	(22)	\$1,705
APN-6 Spares		\$668		\$410		\$726		\$611		\$658
	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	10	\$41,817	11	\$42,561					172	\$200,435
APN-5 Install.										1,863
Total APN-5		\$41,817		\$42,561						\$202,298
O&MN Install.	(22)	\$1,705	(23)	\$1,782	(10)	\$775	(1)	\$78		\$2,796
APN-6 Spares										3,073
GRAND TOTAL										\$215,157

Installation Data: Installation will be accomplished by contractor field mod teams.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/APR-43 Compass Sail/Clockwise OSIP 26-79)

Models of Aircraft Affected: A-7E

Description/Justification:

The AN/APR-43 system is a radar warning receiver which will operate in conjunction with the AN/ALR-45F Radar Warning Receiver. It provides additional combat mission essential countermeasures warning and direction finding capability beyond that provided by the existing AN/ALR-45(V) and AN/ALR-50(V) installations and will in fact negate the need for the AN/ALR-50 which will be removed.

Development Status: TECHEVAL and OPEVAL are complete with excellent results. Approval for service use (ASU) is expected in Mid FY 1982. Limited production was initiated in FY 1981 under ASU waiver as authorized in Secretary of Defense memorandum dated 23 March 1978. RDT&E,N Program Element Number is 63206N (W0638-TW).

Project Financial Plan:

	FY 1979		FY 1981		FY 1982		FY 1983		FY 1984	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	25	\$5,174		\$4,221	50	\$8,538	43	\$9,766	67	\$12,067
O&MN Install.					(25)	\$648	(50)	\$1,388	(43)	\$1,194
APN-6 Spares		\$59				\$1,659		-0-		

	FY 1985		FY 1986		FY 1987		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	88	\$11,925	51	\$4,520			324	\$56,211
O&MN Install.	(67)	\$1,860	(88)	\$2,443	(51)	\$1,416		8,949
APN-6 Spares								1,718
GRAND TOTAL								\$66,878

Installation Data: Installation will be accomplished by a contractor drive-in mod.  
1-162

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Air Data System Improvements (OSIP 38-34)

Models of Aircraft Affected: A-7C/E, TA-7C

Description/Justification:

The present A-7E air data computer (ADC) (CP-953) reliability mean flight hours between failure (MFHBF) is 128 hours with unscheduled maintenance manhours listed at 4,417. The primary purpose of the ADC is to provide air data information to the weapons release system flight crew displays and flight control system. Incorporation of the digital air data computer (DADC), being developed under the Avionics Components and Subsystems (AVCS) Program 64203N Project W0572 for multi-aircraft application, would provide a reliable (MFHBF of 450 hours), maintainable and common air data computer that is directly replaceable with the CP-953. The new DADC also provides for the 1553 BUS; internal fault isolation to the applicable shop replaceable assembly (SRA), and requires new peculiar ground support equipment (PGSE). The AVCS program will provide for commonality with other aircraft (F-14, F/A-18) that will greatly reduce operational support costs.

Development Status: A contract was awarded for the development, test, and evaluation of the DADC in September 1981. RDT&E, N Program Element Number 64203N Project W0572 refers. A-7 integration tests will be conducted in October 1982. Verification flight tests (TECHEVAL) providing justification required for provisional approval for service use (PASU) are scheduled to complete in December 1982. Approval for service use (ASU) is scheduled for the third quarter of FY 1983.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		FY 1987		FY 1988		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	\$2,172	198	\$9,635	191	\$8,600					392	\$20,407
O&MN Install. "0" Level			(1)	\$2	(116)	\$218	(192)	\$361	(83)	\$156		737
O&MN Factory Trng.				\$50								50
APN-6 Spares		\$92		\$1,927		\$1,820						3,839
GRAND TOTAL												\$25,033

Installation Data: Installation will be accomplished by field mod team (FMT) and during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 21-83)

Models of Aircraft Affected: A-7E

Description/Justification:

The AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy tactical aircraft against radar directed air defense system.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981 for test and evaluation. The TEMP (No. 593) is presently in review to support Navy test and evaluation. TECHEVAL is planned for the second quarter of FY 1982 and OPEVAL is scheduled in August 1982 with approval for service use expected November 1982. RDT&E, N Program Element Number 64224N applies.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$5,075		\$4,188	64	\$22,592	137	\$25,890	48	\$7,207
O&MN Install.			(1)	\$14	(1)	\$14	(32)	\$453	(107)	\$1,513
APN-6 Spares		\$53				\$3,466				

OSIP 21-83

Project Financial Plan (Cont'd.):

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			251	\$64,553
O&MN Install.	(110)	\$1,556		3,550
APN-6 Spare				<u>3,519</u>
GRAND TOTAL				\$72,022

Installation Data: Installation of the airframe change kit will be accomplished by Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: On Board Oxygen Generating System (OBOGS) (OSIP 13-82)

Models of Aircraft Affected: AV-8A/C

Description/Justification:

The oxygen generating unit for the AV-8C will be qualified Government furnished equipment (GFE). It will be installed in the space previously occupied by the 5 liter liquid oxygen (LOX) converter aft of the main landing gear wheel well. A wedge shaped mounting base on the unit can mate with existing mounting provisions in the aircraft - hence minimal structural modifications are required. The LOX converter and LOX system gauging components will be removed. Engine bleed air and electrical power will be supplied to the unit. Provisions will be made for routing vent and supply lines from the unit. Modifications to the cockpit oxygen indication/warning system are required.

Incorporation of OBOGS in Fleet aircraft will remove the requirement for shipboard and shore based LOX generating, handling, transport, and servicing equipment. Additionally, it will enhance flight and ground safety by eliminating the safety hazards associated with LOX.

It is estimated that a savings of .17 direct maintenance manhours per flight hour, in support of the AV-8 aircraft, can be achieved by replacing the existing LOX converter with the system described above. An increase in aircraft weight of approximately 6 pounds (if a boost pump is included) is anticipated.

Development Status: The system is being developed and tested for the AV-8C under RDT&E,N Program Element Number 64214N. Preliminary Navy test completed in June 1980. Initial TECHEVAL completed in September 1980. TECHEVAL on production representative article completed in January 1982. OPEVAL will commence May 1982 and complete August 1982. Approval for service use is expected the first quarter of FY 1983. A waiver request has been submitted.

OSIP 13-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	23	\$4,490	21	\$3,413					44	\$7,903
O&MN Install.					(23)	\$277	(21)	\$257		534
APN-6 Spares		\$273		\$216						489
GRAND TOTAL										\$8,926

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

B

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Sealed Lead Acid Battery (OSIP 22-83)

Models of Aircraft Affected: AV-8A/C

Description/Justification:

The battery system presently used by the AV-8A has historically been a high maintenance manhour consumer, logistic burden, and readiness improvement summary evaluation (RISE) contributor. The sealed lead acid battery will provide a no maintenance use and expend battery with a projected minimum useful service life of six months. The sealed lead acid battery system will remove the current requirement for battery servicing at least every seven days and attendant servicing support equipment.

Development Status: This battery system has been developed for the AV-8B. Installation of this battery system in the AV-8C will provide commonality in support requirements.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$2,540	37	\$2,354	5	\$300			44	\$5,194
O&MN Install.			(2)	\$32	(37)	\$487	(5)	\$46		565
O&MN Factory Trng.		\$23		\$23						46
APN-6 Spares		\$24		\$225						249
Grand Total										\$6,054

Installation Data: Installation to be accomplished by the contractor and the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: DECM Pod (OSIP 19-80)

Models of Aircraft Affected: AV-8A/C

Description/Justification:

The HARRIER DECM pod is a defensive ECM system with both pulse and CW jamming capability. The system employs modular construction and will be firmware reprogrammable to accommodate threat parameter changes. The weight and size of the DECM pod will be no greater than 410 pounds and 85 inches long, 16 inches diameter. Pod carriage will be provided on the centerline station. The AV-8A/C aircraft is one of the few tactical aircraft in the U.S. inventory with no defensive ECM capability. DECM capability is essential to aircraft survivability in a hostile environment.

Development Status: The DECM pod is currently under development at Sanders Associates in conjunction with the AN/ALQ-126 Improvement Program. The DECM pod will reflect a design featuring a mid and high band pulse capability derived from the AN/ALQ-126 improvement program and full provisions (including antennae and transmission lines) to accept the AN/ALQ-162 clockwise jammer in the pod. The AN/ALQ-164 pulse jamming capability operates independently from the AN/ALQ-162 CW capability and can be used in that role until the AN/ALQ-162 is installed. Upon installation of the AN/ALQ-162, the total planned operational capability is achieved. Completion of OT&E and approval for service use is expected in late FY 1982. Provisional approval for service use (PASU) for the wiring provisions for the AV-8C has been granted. A waiver request is in process.

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	22	\$1,773			22	\$4,947		\$1,346			44	\$8,066
O&MN Install.			(5)	79	(17)	\$150	(16)	\$159	(4)	\$35		392
APN-6 Spares						\$676		\$374				1,050
GRAND TOTAL												\$9,508

Installation Data. Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by the contractor.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Follow-on Structural Fatigue (OSIP 18-81)

Models of Aircraft Affected: F-4S

Description/Justification:

The F-4J to S conversion program (OSIP 4-76) basically incorporates structural improvements in the F-4J whose service life has expired to permit extension of the service life by an additional eight years, with concurrent installation of wing leading edge slats to enhance maneuvering performance. This is the first time a fleet of operational fighter aircraft will ever have remained in service for such an extended period of time (18 years total).

While the USAF sponsored a full-scale fatigue test on a slatted F-4E, the test was performed on a new airframe. Since a "new" F-4S starts with a 10 year old airframe, it is anticipated that the approved full scale F-4S fatigue test will identify structural failure areas and record failure histories for advance planning and budgeting of structurally significant items throughout the "second" life of the F-4J(S).

Initial structural improvements will consist of fixing known problem areas which have been identified since approval of the F-4J SLEP, with follow-on engineering change proposals (ECP's) generated throughout the 8-year service life extension period in a timely manner based on the full scale fatigue test.

Development Status. Current full-scale fatigue testing has resulted in the decision to incorporate 0° leading edge flaps (inboard), an improved center line splice, and an improved fin cap assembly. Additional requirements will be identified during follow on structural fatigue testing.

Project Financial Plan:

	FY 1981		FY 1982		FY 1983		FY 1984		FY 1985	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		\$180	16	\$1,532	74	\$2,921	77	\$4,040	75	\$3,209
O&MN Install.					(16)	\$1,342	(74)	\$6,207	(77)	\$6,459
APN-6 Spares				\$152		\$355		\$485		

OSIP 18-81

Project Financial Plan (Cont'd.):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			242	\$11,882
O&MN Install.	(75)	\$6,308		20,316
APN-6 Spares				<u>992</u>
GRAND TOTAL				\$33,190

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during SLEP and during Standard Depot Level Maintenance (SDLM) and drive-in mod.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-159 Radio (OSIP 60-82)

Models of Aircraft Affected: F-4S

Description/Justification:

The F-4S currently has only one UHF communications transceiver (RT-793) with one auxiliary receiver (AN/ARR-69). Both pieces contain early 1960's technology and are currently exhibiting an unsatisfactory mean flight hour between failure (MFHBF). This program proposes to install the AN/ARC-159 system as a dual system (backup and prime) in the F-4S. A backup ARC-159 is currently being installed in the F-4N and a dual system is being installed in the RF-4B.

Development Status: The AN/ARC-159 radio is approved for service use.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	12	\$2,099	38	\$5,409	50	\$6,268	20	\$2,591			120	\$16,367
O&MN Install.			(6)	\$75	(44)	\$554	(50)	\$629	(20)	\$252		1,510
APN-6 Spares				\$151								151
GRAND TOTAL												\$18,028

Installation Data: Installation will be accomplished at the Naval Air Rework Facility (NARF) during SLEP, Standard Depot Level Maintenance (SDLM), and by field mod teams (FMT).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/AWG-10A; Obsolescence/R&M Program (OSIP 19-81)

Models of Aircraft Affected: F-4S

Description/Justification:

F-4S aircraft are projected to remain operational through the early 1990's. As an essential part of the F-4 weapons system, the AN/AWG-10A missile control system (MCS) must remain operational for the same period. Recently, several components/critical subassemblies have become unobtainable because vendors have either discontinued production or have gone out of business. In order to maintain the AWG-10A in an operational status, replacement of these obsolescent items with qualified substitutes must be accomplished in an expeditious manner. Approximately twenty shop replaceable assemblies (SRA's)/line replaceable units (LRU's) absolutely essential to the operation of the MCS are effected. The purpose of this program is to effect replacement of the obsolescent components/subassemblies, to preclude imminent not mission capable (NMC) AWG-10A systems. Maximum coordination with the type commanders will be maintained to minimize the accelerated modification schedule impact on aircraft/carrier operational schedules and provide for the most expeditious elimination of the obsolescent items.

Development Status: The AWG-10A is in service use. The proposed modifications will require a contractor development program which will be monitored by the Navy to insure future supportability of AWG-10A radars.

Project Financial Plan:

	FY 1981		FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	\$6,777	44	\$19,017	50	\$13,862	30	\$6,292			130	\$45,943
O&MN Install.					(38)	\$579	(55)	\$535	(37)	\$251		1,365
APN-5 Spares						\$1,717		\$1,128				2,845
GRAND TOTAL												\$50,158

Installation Data: Installation will be accomplished by a contractor modification turnaround program.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: J-79 Low Smoke Engine Provisions (OSIP 76-81)

Models of Aircraft Affected: RF-4B

Description/Justification:

This program replaces existing J79-GE-8 engines with smokeless J79-GE-10B engines being converted under OSIP 9-75. Standard configuration -10E engines will be utilized, but aircraft modification is required mainly in the keel/aft engine bay area to accommodate the -10B afterburner. Weight increases by 442 pounds; space required increases by 2.48 cubic feet. This improvement will reduce visual acquisition range of the RF-4B as it has with the F-4J/S, and prevent distant recognition of an RF-4B versus an F-4J/S in an operational environment. Commonality of RF-4B engines with F-4J/S engines on deployments is a distinct logistic advantage.

Development Status: Development is complete. This is for provisions only for the RF-4B. Engine modification being done under OSIP 9-75.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$3,216		\$4,537	17	\$3,137			26	\$10,890
O&MN Install.			(1)	\$656	(7)	\$1,423	(18)	\$4,074		6,153
APN-6 Spares		\$840		-0-						840
GRAND TOTAL										\$17,883

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and drive-in mod. Installation costs also include engine rework incident to modification.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/APR-43 Compass Sail Clockwise (CSIP 61-82)

Models of Aircraft Affected: RF-4B

Description/Justification:

The AN/APR-43 system is a radar warning receiver which will receive approval for service use (ASU) in the A7E and operates in conjunction with the AN/ALR-45F radar warning receiver. It provides additional combat mission essential countermeasures warning and direction finding capability beyond that provided by the existing AN/ALR-45(V) and AN/ALR-50(V) installations and negates the need for the AN/ALR-50 which will be removed.

Development Status: Extension of ASU, which is expected in late FY 1982, will be substantiated by appropriate follow-on testing and/or documented records of operational flights. RDT&E,N Program Element Number is 63206N (WO 638-TW).

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	21	\$2,930					21	\$2,930
O&MN Instal.			(17)	\$561	(4)	\$132		693
APN-6 Spares		-0-						-0-
GRAND TOTAL								\$3,623

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and by field mod teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 73-83)

Models of Aircraft Affected: RF-4B

Description/Justification:

The AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy tactical aircraft against radar directed defense system.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981 for test and evaluation. The TEMF (No. 593) is presently in review to support Navy test and evaluation. TFCHEVAL is planned for the second quarter of FY 1982 and OPEVAL is scheduled in August 1982 with approval for service use expected November 1982. RDT&E,N Program Element Number 64224N applies.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$2,433	9	\$963	14	\$1,100	2	\$100			26	\$4,596
O&MN Install.			(1)	\$8	(5)	\$29	(14)	\$81	(6)	\$35		153
APN-6 Spares		\$101		\$199		\$162						452
GRAND TOTAL												\$5,211

Installation Data: Installation of the Airframe Change Kit will be accomplished during Standard Depot Level Maintenance (SOLM) and field modification (FMT).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Television Camera Sight (TCS) (OSIP 62-82)

Models of Aircraft affected: F-14A

**Description/Justification:**

The television camera sight (TCS) will provide the pilot and radar intercept officer (RIO) of an F-14A the ability to visually identify airborne targets at long stand-off ranges during day clear weather conditions. The TCS significantly enhances the F-14A weapon systems effectiveness and survivability whenever operational conditions dictate positive target ID prior to attack.

Development Status: Approval for service use was granted in January 1981. This change will be incorporated in FY 1982 production aircraft.

### Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	66	\$6,055	77	\$18,500	77	\$21,323	69	\$36,385	46	\$5,094
O&MN Install.					(31)	\$810	(77)	\$2,012	(79)	\$2,064
APN-6 Spares		\$914		\$2,796						
	<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5					335	\$87,267				
O&MN Install.	(69)	\$1,802	(79)	\$2,064		8,753				
APN-6 Spares						<u>3,710</u>				
GRAND TOTAL						\$95,830				

Installation Data: Installation will be accomplished by the Naval Air Fework Facility (NAFF) during Standard Depot Level Maintenance (SDLM).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: PHOENIX AN/AWG-9, Computer Expanded Memory (OSIP 25-91)

Models of Aircraft Affected: F-14A

Description/Justification:

The memory of the AWG-9 CDC computer will be expanded from 32k to 64k computer memory locations. The expanded memory will consist of four AN/AYK-14(V) memory modules. These modules are also used in the Navy standard computer and are core type destructive read-out (DRO) memories. The present nondestructive read-out (NDRO) memory (452 unit) and DRO memory will be eliminated. This will reduce the weight, volume and required cooling for the AWG-9 computer. The present tactical software program can be used with either the present or expanded computer memories and the units will be interchangeable in the F-14 aircraft.

Development Status: The AN/AYK-14(V) memory modules are completely developed. This change was incorporated in production aircraft #406.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	53	\$7,972	67	\$9,864	71	\$12,253	79	\$15,549	56	\$12,565
O&MN Install.				\$50	(53)	\$1,465	(57)	\$1,692	(77)	\$1,814
APN-6 Spares		\$1,850		\$2,405		\$2,518		\$1,386		
	<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5					326	\$58,203				
O&MN Install.	(79)	\$1,599	(60)	\$1,191		7,811				
APN-6 Spares						8,159				
GRAND TOTAL						\$74,173				

Installation Data: Installation will be accomplished by contractor field mod teams.  
1-178

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-182 Radio (OSIP 24-83)

Models of Aircraft Affected: F-14A

Description/Justification:

The AN/ARC-182 combination radio is a new radio for all tactical aircraft. It provides VHF-FM(30-88MHz), VHF-AM(108-156MHz), VHF-FM(156-174MHz) and UHF-AM(225-400MHz) securable voice communications. Size/weight is 200 cubic inches/10 pounds. Two broadband aircraft antennas are also provided. This replaces the ARC-159V5 or ARC-51 rear cockpit radio.

Development Status: The ARC-182 radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661-CC. Approval for service use (ASU) is scheduled for August 1982. Based upon ASU, production and retrofit incorporation will commence in FY 1983.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	65	\$2,102	77	\$1,872	76	\$1,942	75	\$2,010
O&MN Install.			(26)	\$225	(77)	\$666	(79)	\$684
APN-6 Spares		\$415		\$352				

  

	<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	42	\$1,162					335	\$ 9,108
O&MN Install.	(69)	\$597	(69)	\$597	(15)	\$130		2,899
APN-6 Spares								767
GRAND TOTAL								\$12,774

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Spoiler Actuator Water Integrity (OSIP 63-32)

Models of Aircraft Affected: F-14A

**Description/Justification:**

Due to water intrusion, an excessive field failure rate has been experienced by the spoiler actuator resulting in inadvertent operation or failure to operate. This change will correct this problem by increasing the water protection of the spoiler actuator assemblies and their component parts. This increased water protection is to be achieved by the incorporation of better sealant and potting techniques combined with increased "O" ring squeeze in all areas of the actuator assembly where water intrusion has been found. This change also includes a water immersion test program to assure the desired actuator integrity once the aforementioned modifications have been incorporated. Projected reliability improvement is 360 percent.

Development Status: The design is being completed at the Naval Air Rework Facility (NARF) Norfolk.

### Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	36	\$1,220	57	\$1,207	77	\$1,717	79	\$1,352	86	\$2,086
O&MN Install.			(14)	\$79	(57)	\$321	(77)	\$433	(79)	\$444
APN-6 Spares		\$206		-0-						
	<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5					335	\$ 8,082				
O&MN Install.	(69)	3388	(39)	\$219		1,884				
APN-6 Spares						<u>206</u>				
GRAND TOTAL						\$10,172				

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Replace Selected Wiring Harnesses (OSIP 38-80)

Models of Aircraft Affected: F-14A

Description/Justification:

Numerous wiring harnesses made of "POLY-X" wire have had an abnormal insulation aging, embrittlement and cracking resulting in wire-to-wire shorts, particularly during the presence of water. High PH value solutions such as aircraft soaps, when in contact with the "POLY-X" wire, have shown an accelerated insulation aging, embrittlement and cracking. Poor hot wire stamp marking procedures and bad quality solder sleeve connections in the production line have also contributed to premature insulation breakdown in Fleet aircraft. The MIL-C-81511 connector has also contributed to aircraft electrical problems. Connector environmental seal breakdown and case corrosion have caused numerous pin-to-pin shorts which result in equipment malfunctions and failures. Some of the wire and connector failures have been observed as spurious signals on control wires causing spoilers to stick in the up position, inadvertent autopilot commands and power shorts which disable the autopilot completely.

"KAPTON" wire is currently being used in production and will eliminate the problems characteristic of "POLY-X" wire. Cadmium plated connectors with a 10-fold increase in corrosion protection are available now. Extensive utilization of "KAPTON" wire and cadmium connectors throughout the airframe commenced with the FY 1979 production aircraft (aircraft no. 360 and subsequent). Retrofit of selected susceptible harnesses will be accomplished as they are identified. Currently, five wheel well harnesses in each aircraft are being replaced with improved wire and cadmium connectors under another program. This program involves the manufacture and installation of the wing spoiler flight control, nose and main landing gear and the aft fuselage flight control harnesses by the Naval Air Rework Facility. This is a safety change and will not result in any change in weight or require additional space.

Development Status: No development is required. These changes were phased into production during FY 1978-1979 timeframe.

OSTP 38-80

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	110	\$2,656	96	\$2,478	71	\$4,320	46	\$2,964		
O&MN Install.			(1)	\$25	(55)	\$1,381	(91)	\$2,441	(92)	\$2,468
APN-6 Spares				\$44				-0-		
	<u>FY 1985</u>		<u>TOTAL</u>							
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>						
APN-5			323	\$12,418						
O&MN Install.	(94)	\$2,253		8,568						
APN-5 Spares				44						
GRAND TOTAL				\$21,030						

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: F-14A Weapons Rail Operational Improvement (OSIP 25-83)

Models of Aircraft Affected: F-14A

Description/Justification:

Weapons rails are in a state of increasing deterioration due to water and cleaning solution intrusion; wiring insulation and connector breakdown; binding, bending, interference and non-confidence in mechanical linkage; unsatisfactory fasteners; and the inability to test the PHOENIX weapon system prior to take off on the carrier deck due to electromagnetic interference (EMI). PHOENIX capability is dependent on implementation of this program.

Development Status: No approval for service use is required. This will be a modification of the harnesses and connectors to correct EMI and maintenance problems. An EMI study by Grumman has been initiated to verify that the redesigned weapon rails meet the latest specification requirements. This study will be completed in June 1982.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	43	\$1,876	360	\$12,193	480	\$17,088	480	\$17,933	132	\$5,181
O&MN Install.					(258)	\$2,288	(430)	\$3,614	(480)	\$4,257
APN-6 Spares		\$3		\$3						

  

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			1,500*	\$54,271
O&MN Install.	(332)	\$2,945		13,304
APN-6 Spares				6
GRAND TOTAL				\$67,581

\*Quantity listed is rails.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) and the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification title and No.: Replace Aircraft Wiring/Add Multiplexer Data Buss (MUX) (Wiring Only) (OSIP 17-82)

Models of Aircraft Affected: F-14A

Description/Justification:

Aircraft wire used in F-14 aircraft is approximately 85 percent Poly-X insulated, with the remaining amount split between Teflon and Kapton. Poly-X and Teflon deteriorate in service. Deterioration is accelerated by water and wash solvents. The insulation cracks allowing water to cause cross talk between wires (shorts). A major portion of this wire must be replaced with Kapton before deterioration causes serious aircraft damage. A previous program (OSIP 38-80) retrofitted harnesses in the wheel wells, on the main landing gear and in the wing. An investigation is in progress to determine which additional wire harnesses need to be replaced and what additional electrical changes are required. The engineering change proposal is expected in January 1982. This program will correct the deficiencies identified during the study less those harnesses covered by OSIP 38-80. The maximum incorporation rate is 60 per year due to the magnitude of the change. MUX wiring may be added at the same time. The aircraft will be reconfigured to Block 105 configuration.

Development Status: Kapton wire has been qualified and is in production. The only development remaining is to prepare harness lay-out boards for the various aircraft configurations and verify the completed items with the Drive-In Theater Manufacturing Company (DITMCO) Tester. Production incorporation of KAPTON was phased into the aircraft during the FY 1978-79 timeframe.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$300	12	\$6,342	20	\$9,881	40	\$21,780	48	\$30,759	48	\$29,751
O&MN Install.					(1)	\$389	(7)	\$2,725	(15)	\$5,840	(30)	\$11,680
APN-6 Spares				\$419		\$736		\$859				

  

	<u>FY 1988</u>		<u>FY 1989</u>		<u>FY 1990</u>		<u>FY 1991</u>		<u>FY 1992</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$31,239	48	\$32,801	59	\$42,333				
O&MN Install.	(48)	\$18,688	(48)	\$18,688	(48)	\$18,688	(48)	\$18,688	(48)	\$18,688

1-184

OSIP 17-82

Project Financial Plan (Cont'd.):

	<u>FY 1993</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			323	\$205,266
O&MN Install.	(30)	\$11,680		125,754
APN-6 Spares				<u>2,014</u>
GRAND TOTAL				\$333,034

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: TF30-P-414A Package (OSIP 15-82)

Models of Aircraft Affected: F-14A

Description/Justification:

Due to the greater than expected capability of the F-14A aircraft the engine has been exposed to a more demanding environment than originally intended. The engine shortcomings which have surfaced as a result have had significant detrimental effects on the F-14A operational and safety record. The safety aspects are being addressed as soon as they become known but the operational readiness improvement fixes are continually being deferred. This package is designed to address those lower short-term priority items which become our long-term crises. The package includes repairs/reworks/redesigns for low time low cycle fatigue (LCF) parts replacement, for engine stall improvement items and for improved durability, reliability and maintainability items. All the items will be tested together and the successful changes will be incorporated into one omnibus engineering change proposal (ECP). The incorporation of the resulting change will produce a new TF30 model engine - TF30-P-414A. This program provides airframe change kits for 370 aircraft and power plant change kits for 1,007 engines.

Development Status: Component testing commenced in June 1979. One engine completed 2400 hours of Accelerated Simulated Mission Endurance Testing (ASMET) in January 1981. Production effectivity will commence in aircraft #456.

OSIP 15-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	114	\$58,142	210	\$111,674	132	\$84,899	181	\$121,792	106	\$74,404		
O&MN Install.			(114)	\$16,897	(210)	\$32,626	(132)	\$19,926	(181)	\$27,256	(106)	\$15,981
APN-6 Spares				\$12,012		\$9,415		\$4,275		\$33		

	<u>FY 1988</u>		<u>FY 1989</u>		<u>FY 1990</u>		<u>FY 1991</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	103	\$78,606	104	\$82,910	57	\$47,430			1,007	\$659,363
O&MN Install.			(103)	\$15,391	(104)	\$15,540	(57)	\$8,533		152,150
APN-6 Spares										<u>25,735</u>
GRAND TOTAL										\$837,748

Note: Quantity represents engines to be modified.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF). Engine installation O&MN funding includes rework costs.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: F-14A Nose Wheel Steering Damper (OSIP 27-83)

Models of Aircraft Affected: F-14A

Description/Justification:

The nose wheel steering damper has been experiencing failures caused by twisting of the output shaft when towed beyond the 120° steering limit. Failure or twisting of the shaft prevents the steering damper from centering the launch bar. If the launch bar is not centered it will hit the landing gear doors and ECS ducts when the nose gear is retracted.

This modification of the nose wheel steering damper will incorporate a steel output shaft and "O" level replaceable shear pin to preclude damage to the shaft and to the aircraft. It will not reduce the number of steering damper failures; but when the unit is overtowed, the shear pin will fail with no other damage to the steering damper. The unit can be repaired at "O" level maintenance, whereas, before, the unit had to be repaired at depot level.

The mean flight hours between failure (MFHBF) are 477 for the present and proposed steering damper. The maintenance manhours per flight hour (MMH/FH) will be reduced to .0221 for the proposed damper compared to .0412 for the present damper.

Development Status: A prototype unit has been manufactured by Grumman and was tested at the Naval Air Test Center, Patuxent River. The unit operated satisfactorily on F-14 aircraft. No approval for service use is required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	241	\$3,169	94	\$1,268							335	\$4,437
O&M/ Install.					(59)	\$202 (142)	\$487 (134)	\$460				1,149
APN-6 Spares		\$705		\$675								1,380
GRAND TOTAL												\$6,966

Installation Data: Components require vendor modification. Fleet level maintenance will remove and replace in the aircraft.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AWG-9 Digital Modification Update (OSIP 8-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The hardware changes include the development of two new digital electronic units, the radar signal processor (RSP), and the analog signal converter/radar data processor (ASC/RDP), plus a digital display. The RSP is partitioned into three module groups: programmable signal processor (PSP), F-14 interface, and power supply. The ASC/RDP also is sectioned into three module groupings: ASC, RDP and power supply. The ASC is housed in a special electromagnetic interference (EMI) enclosure to prevent noise pickup from the adjacent RDP and power supply (PS) modules. Modifications are required to the antenna controller synchronizer and interface unit (IFU) to be compatible with the new units. The RSP and the ASC/RDP units are mounted in the radar processor (961) rack. The deletion of the 039, two 042 and 083 units provides the space for these two units. The digital display has the same external dimensions and the same mounting and hookup provisions as the deleted detail data display.

The new 961 rack design and construction is similar to the existing 961 rack and will fit within the envelope currently provided. The rack cooling-air plenum is increased to provide larger cooling air holes for interface with the rear panels of the 041 and 061 units. The rack will attach to the aircraft using the four attach bolts currently provided at the two ends of the existing AWG-9 961 rack. A rack harness will be provided to interconnect the existing aircraft harness to the unit rack connectors.

Installation in the aircraft will involve enlarging the cooling air ducting up to the 961 rack to provide additional cooling air, adding wires and circuit breakers for AC and DC power, and replacing the 961 rack.

Development Status: The program commenced during May 1976. Lab tests were conducted and a roofhouse demonstration of a PSP configured AWG-9 was conducted against multiple targets in July 1978. Full scale engineering development (FSED) was approved in September 1979 and is scheduled to complete by the second quarter of FY 1982. Two F-14A aircraft were modified with PSP installation and completed Navy Preliminary Evaluation. NPE 1 was completed in April 1981. NPE 2 is scheduled for March-April 1982. Production decision turn on is scheduled for October 1982.

OSIP 8-84

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	39	\$31,701	69	\$44,477	69	\$46,579	69	\$49,031	69	\$51,498
O&MN Install.			(2)	\$82	(57)	\$2,350	(69)	\$2,845	(69)	\$2,345
APN-6 Spares		\$8,301		\$8,898		\$6,867		\$763		\$696
	<u>FY 1989</u>		<u>FY 1990</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5	20	\$15,673			335	\$239,059				
O&MN Install.	(69)	\$2,845	(69)	\$2,845		13,812				
APN-6 Spares						25,525				
GRAND TOTAL						\$278,396				

Installation Data: Installation will be accomplished by contractor field mod teams on the East and West Coasts.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Structural Improvements (OSIP 32-83)

Models of Aircraft Affected: F-14A

Description/Justification:

This is an omnibus structural modification package containing fixes for the areas on the F-14A found to be deficient during the aircraft fatigue tests currently underway. It is anticipated the following areas will need modification:

1. Replacement of the wing box fittings
2. BL 70 beef up
3. BL 10 beef up
4. Center section beef up under box beam
5. Fin tang replacement at Fuselage Station 737

Development Status: Aircraft #98 fatigue tests are currently underway. 3100 out of the total 18,000 test hours have been completed. The test is presently scheduled for completion during April-May 1982. No approval for service use is required.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,259	6	\$3,658	20	\$14,513	40	\$33,957	48	\$39,597	48	\$40,752
O&MN Install.					(1)	\$558	(7)	\$3,908	(15)	\$8,374	(20)	\$16,748
APN-6 Spares		-0-		\$367		\$1,370		\$2,376				

OSIP 32-83

Project Financial Plan (Cont'd):

	<u>FY 1989</u>		<u>FY 1990</u>		<u>FY 1991</u>		<u>FY 1992</u>		<u>FY 1993</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$42,796	59	\$55,369	55	\$54,196				
O&MN Install.	(48)	\$26,799	(48)	\$26,799	(48)	\$26,799	(48)	\$26,799	(48)	\$26,799

	<u>FY 1994</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			324	\$286,097
O&MN Install.	(31)	\$17,307		180,890
APN-6 Spares				<u>4,613</u>
GRAND TOTAL.				\$471,600

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-67 Receiving Set, Countermeasures (OSIP 9-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 and AN/ALR-50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CRT azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has been integrated with the ALQ-99/EA-5B and has successfully completed all required lab and ground testing prior to starting TECHVAL. TECHVAL should be completed in the second quarter of FY 1982 and OPEVAL should start in the third quarter of FY 1982. Approval for service use is anticipated in the second quarter of FY 1983.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	41	\$24,875	88	\$46,256	119	\$68,889	87	\$44,396		
O&MN Install.			(10)	\$735	(96)	\$7,060	(100)	\$7,354	(101)	\$7,428
O&MN Training		\$850								
APN-6 Spares		\$2,280		\$7,645						



OSIP 9-34

Project Financial Plan (Cont'd):

	<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			335	\$184,417
O&MN Install.	(28)	\$2,059		24,636
O&MN Training				850
APN-6 Spares				<u>11,925</u>
GRAND TOTAL				\$221,828

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Correction of Discrepancies (OSIP 20-82)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Discrepancies found during the testing of limited production aircraft often lead to improvements that can be incorporated in production aircraft. Aircraft that have been accepted into the Fleet will require funding through the Aircraft Modification Program rather than as a stipulation of warranty. The alternative to retrofitting would be multiple configurations and compounded maintenance requirements. Also, there are anticipated changes that may not be caught in the first blocks of production aircraft that will need to be retrofitted into delivered aircraft. Examples of such changes are:

- (1) Incorporation of radar antenna spoiled beam.
- (2) Redesign of gun blast diffuser.
- (3) Strengthen forward fuselage keel web.
- (4) Corrosion resistant fluid coupling.

Development Status: Each change will be tested and validated prior to installation in the F-18.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$200	16	\$3,389	17	\$3,791	34	\$7,380
O&MN Install.			(12)	\$39	(22)	\$145		184
APN-6 Spares		\$29		\$501		\$547		1,070
GRAND TOTAL								\$8,634

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) field mod teams, organizational and intermediate levels.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-67 Receiving Set, Countermeasures (OSIP 34-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 AN/ALR-50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target track and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CI azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has been integrated with the ALQ-99/EA-6B and has successfully completed all required lab and ground testing prior to starting TECHEVAL. TECHEVAL should be completed in the second quarter of FY 1982 and OPEV should start in the third quarter of FY 1982. Approval for service use is anticipated in the second quarter of FY 1983.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$7,013	8	\$4,429	17	\$8,142					25	\$19,584
O&MN Install.							(15)	\$422	(10)	\$281		703
O&MN Training		\$900										900
APN-6 Spares				\$673		\$1,627						2,300
GRAND TOTAL												\$23,487

Installation Data: Production incorporation will commence with the FY 1981 procurement aircraft numbers F/A-37 and TF/A-18. Retrofit will be accomplished at Naval Air Rework Facility (NARF) North Island during Standard Depot Level Maintenance (SDLM), which will commence in FY 1985.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Non-Cooperative Target Recognition (NCTR) (OSIP 36-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Non-Cooperative Target Recognition (NCTR) is a generic term which implies that an unknown target may be identified in spite of the target's refusal to cooperate in any way. NCTR is only one aspect of the broader identification friend or foe (IFF) problem and significantly adds to the pilot's ability to discern whether an unknown target beyond visual range is a friend or foe without an elaborate question and answer scheme such as the MK XII IFF system. The AN/APG-65 radar was designed for operation in multiple modes to satisfy multiple missions. It is the primary sensor that enhances the day or night all-weather capability of the F/A-18. The F/A-18 is the scheduled replacement for two aircraft mission areas that impose unique design requirements on the radar system. An extremely fast data processing rate is required for the air-to-air mode. The air-to-surface mode calls upon a very large data storage capacity. NCTR changes to the baseline AN/APG-65 provide for (1) increase in storage capacity from 4K to 16K Random Access Memory (RAM), (2) the addition of a micro-processor, and (3) improvements to software.

Development Status: Design is complete, hardware modification and laboratory testing are in progress, software development is in progress with an estimated completion date during the fourth quarter FY-1983. Technical evaluation estimated the third quarter FY 1982 and OPEVAL the fourth quarter FY 1982. Approval for service use is anticipated in the second quarter of FY 1983. Production incorporation is anticipated to commence with the FY 1992 procurement, aircraft F/A-87 and TF/A-20.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$3,476	25	\$4,034	36	\$5,401	14	\$2,600	10	\$1,900	94	\$17,411
O&MN Install.			(8)	\$260	(26)	\$818	(30)	\$944	(30)	\$944		2,966
APN-6 Spares		\$455		\$785								1,240
GRAND TOTAL												\$21,517

Installation Data: It is anticipated that retrofit will be accomplished at the Naval Air Rework Facility (NARF) and by field mod team and at organizational level (due to multiple kits and effectivity) with aircraft effectivity F/A 10-86 and TF/A 3-19.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Provisions for SPARROW AIM-7M (OSIP 37-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The AIM-7M SPARROW Missile being developed as a replacement for the AIM-7F Missile, a radar guided air-to-air missile normally employed in medium range attacks. The AIM-7F is no longer in production. The upgraded missile will have a larger radar guidance system envelope and will be less susceptible to jamming in an ECM environment. In order to accommodate this missile with the increased envelope, modifications are required to aircraft avionics. Specifically the stores management set (SMS) and mission computer (MC) will be modified with the emphasis on software.

Development Status: The AIM-7M SPARROW Missile engineering development is complete and testing has commenced with anticipated completion in the third quarter of FY 1982. Production deliveries are scheduled to commence immediately upon completion of testing. Approval for service use is anticipated in the fourth quarter of FY 1982. Production incorporation is planned to begin with aircraft numbers F/A-87 and TF/A-20 (FY 1982 procurement).

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$1,048	25	\$3,066	60	\$7,735					94	\$11,849
O&MN Install.			(4)	\$17	(25)	\$105	(50)	\$210	(15)	\$63		395
APN-6 Spares		\$210		\$460		\$1,160						1,830
GRAND TOTAL												\$14,074

Installation Data: Retrofit will be accomplished at the Naval Air Rework Facility (NARF) North Island concurrent with Standard Depot Level Maintenance (SDLM) and by field mod team (FMT) with effectivity F/A 10-86 and TF/A 3-19.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Installation Provisions for TACTS (OSIP 36-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The tactical aircrew combat training system (TACTS) is comprised of both aircraft instrumentation subsystem (AIS) and ground station components, tracking instrumentation system (TIS), control and computation subsystem (CC), and display and debriefing subsystem (DDS). The AIS module consisting of a digital interface unit, transmitter/receiver, and power supply, is installable and removable by one person on an as needed basis. Principle of operation involves data transmission to ground where it is analyzed, recorded and displayed as location plots. A subsequent airborne display, through aircraft avionics, permits air-to-air and air-to-ground weapons delivery simulations. Changes will be made to the aircraft antenna, wiring, and mounting hardware to accept the TACTS.

Development Status: Hardware has been developed. Approval for service use is anticipated in the third quarter of FY 1982. Installation of provisions for the basic capability were incorporated into production commencing with the FY 1980 procurement, aircraft F/A-17 and TF/A-5. A modification to incorporate full TACTS capability will consist of firmware and switching devices necessary for mission computer and stores management set compatibility. Production installation will commence with the Lot VI (FY 1982) procurement, aircraft F/A-87, TF/A-20.

Project Financial Plan:

	FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	\$424	93	\$2,117	94	\$2,541
O&MN Install. "O" Level			(85)	-0-		-0-
O&MN Contr. Install.			(9)	\$38		38
APN-6 Spares		\$3		\$93		96
GRAND TOTAL						\$2,675

Installation Data: Retrofit of the basic provisions required for the FY 1979 procurement of nine aircraft (F/A 10-16 and TF/A 3-4) will be by contractor field teams. Retrofit of the TACTS compatible mission computer and stores management set software and related hardware for the FY 1979, FY 1980, and FY 1981 procurements will be accomplished at the "O" level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: One-Box INS Configuration (OSIP 39-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The inertial navigation set (INS) is the dominant equipment for providing position, velocity and acceleration information. It provides sensor data to the mission computer and velocity data to the radar for improved weapons delivery accuracy. The core memory is replaced with an ultra violet programmable read only memory (U/V PROM), leading to a reduction in failure rate and power requirement. The name one-box is suggested from the physical combination of component boxes. This is a CFE box change only and does not involve any change to the aircraft. The redesign will provide 25 percent improved maintainability and a 25 percent increase in mean time between failure (MTBF).

Development Status: System design is complete and fabrication is in progress. Qualification testing is scheduled to complete in the second quarter FY 1982. Approval for service is anticipated in the third quarter of FY 1983. Production incorporation commenced with the FY 1981 procurement, aircraft F/A-37 and TF/A-10.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$1,587	25	\$4,042	34	\$5,629
O&MN Install. "O" Level		-0-				-0-
APN-6 Spares		\$415		\$808		1,223
GRAND TOTAL						\$6,852

Installation Data: Retrofit of the CFE will be accomplished at the organizational level with effectivity F/A 17-36 and TF/A 5-9.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: DA INCO 718 Material Incorporation (OSIP 10-54)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Failure of the low pressure turbine (LPT) disk, manufactured from Rene 95 powdered metal material, is believed to have been a contributing factor to the loss of aircraft TF-2 in England in September 1980. The disk failure is believed to have resulted from an abnormally large, undetected flaw in the material. The difficulties encountered with the Rene 95 manufacturing/inspecting process, discovered as a result of the accident investigations, have resulted in the replacement of Rene 95 with DA INCO 718 material in the following highly stressed, critical, rotating parts:

- (1) LPT Rotor Disk
- (2) LPT Rotor Forward Seal
- (3) HPT Rotor Disk
- (4) Outer Balance Piston Seal

High Pressure Rear Spool: In addition to the material replacement in these five parts, the following have been dimensionally redesigned in order to reduce the maximum operating stresses.

- (1) HPT Rotor Cooling Plates
- (2) HPT Aft Shaft
- (3) LPT Torque Cone
- (4) Inner Balance Piston Seal

The material change to DA INCO 718 which has better Low Cycle Fatigue (LCF) characteristics than the current Rene 95 material, along with a slight dimensional redesign, enable all of these nine redesigned parts to achieve a minimum life of 4,000 mission hours. The new material also utilizes a more easily controlled manufacturing and inspecting process. Difficulties in this area were a major contributor to the problems associated with Rene 95 powdered metal material.



OSIP 10-84

Development Status: Engine and component test program consists of two phases, qualification and verification. The qualification phase includes: a. engine test to quantify the effect of the increased LPT rotor weight on the #4 bearing, an engine overtemperature test to demonstrate model specification conformance, 365 fighter accelerated mission test (FAMT) endurance hours on two sets of hardware, and spin pit overspeed tests of separate LPT, HPT and HPC rotors. All this testing will be completed prior to engineering change proposal (ECP) submittal. The verification phase will be a continuation of FAMT endurance and spin pit testing including approximately 50,000 spin pit cycles on separate LPT, HPT and HPC rotors, an evaluation of defect tolerance by spin pit testing parts with artificial defects, and FAMT endurance testing on four sets of hardware in order to evaluate the full life of the redesigned parts.

Estimated production incorporation will commence in engine serial number 310097 and subsequent. This engine is the 17th engine delivered under the Lot V Contract and will be delivered in June 1982.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	21	\$9,728	71	\$28,188					95	\$37,916
O&MN Install.			(6)	\$14	(48)	\$112	(41)	\$96		222
APN-6		\$1,504		\$ 4,245						5,749
GRAND TOTAL										\$43,887

Installation Data: Estimated production incorporation in June 1982 will leave 95 engines for retrofit, 25 Lot III, 54 Lot IV and 16 Lot V. Retrofit is scheduled to commence in late FY 1984 at the Naval Air Rework Facility (NARF) North Island.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Correction of Discrepancies identified during preliminary evaluation and subsequent flight test programs (OSIP 11-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Discrepancies found during testing and evaluation can sometimes be incorporated in production aircraft, effective with the physical configuration audit which establishes the product baseline of the aircraft. However, when this cannot be done due to time constraints, retrofit of the changes in already delivered aircraft will require funding through the Aircraft Modification Program. The unacceptable alternative to retrofitting would be multiple configurations in the Fleet, which create maintenance and supply problems, and in many cases the mission capability of the aircraft would be adversely affected.

- (1) Incorporation of Differential Leading Edge Flaps and improved flying qualities.
- (2) Airframe Mounted Accessory Drive (AMAD) Heat Exchanger.
- (3) Main Landing Gear Trunnion Beef-up.
- (4) Nose Landing Gear Drag Brace Fatigue Improvement.
- (5) Sealed Lead Acid Battery.
- (6) Throttle Sensitivity.

Development Status: Each change is either undergoing testing or will be tested and validated prior to installation in the F/A-18.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$8,948		\$10,934		\$2,100				\$21,982
O&MN Install		\$488		\$927		\$1,539		\$279		3,233
APN-6 Sparcs		\$1,969		\$2,406		\$480				4,855
GRAND TOTAL										\$30,070

OSIP 11-84

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) or contractor field modification teams, organizational and intermediate levels. Installation will occur by order of priority as established from the results of further flight testing and as operational flights are accumulated.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Elimination of Fuel Vapor Puffs (OSIP 12-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Vapor puffs occur due to unburned afterburner fuel during bursts into and chops out of afterburner operation thus identifying aircraft location and thrust condition to adversaries. Modification to the electronic control unit (ECU), afterburner control (ABC), and main fuel control (MFC) are required to completely eliminate the chop problem.

Development Status: The ECU modification to eliminate puffs on bursts into afterburner was incorporated into production with engine S/N 310027 (first Lot IV engine). The chop fix will be qualified on a CIP engine and is planned for production incorporation in March 1982 with S/N 310081 (first Lot V engine).

Both burst and chop fixes were flight tested on engine S/N 215218 at the Naval Air Test Center (NATC), Patuxent River and showed significant improvement over the current configuration.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	79	\$2,468					79	\$2,468
O&MN Install.			(54)	\$210	(25)	\$97		307
APN-6 Spares		\$370						370
GRAND TOTAL								\$3,145

Installation Data: The burst fix was incorporated into production with S/N 310027 leaving 25 engines for retrofit. The chop fix will be incorporated with S/N 310081 (first Lot V engine) leaving 79 engines for retrofit. In order to prevent a double retrofit of the first 25 engines, 79 kits will be delivered, 25 of which will include both fixes while the remaining 54 will address only the chop fix.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: OV-10D Service Life Extension (OSIP 39-84)

Models of Aircraft Affected: OV-10D

Description/Justification:

The FLIR and laser designator equipped OV-10D has proven extremely valuable to the Fleet Marine Force. Airframe structural service life of the OV-10D is presently projected to expire in the 1980's without a replacement procurement program to satisfy the operational mission requirement. Additionally, the economic service life is also approaching due to advances in systems state-of-the-art and the consequent changes in the industrial base leading to increased operating costs. This program will extend the aircraft as an effective mission asset into the late 1990's.

Development Status: Several elements of the airframe are known to be a problem and are currently extending many manhours for inspection and repair or are reducing the operational flexibility of the aircraft. A program is presently underway at the Naval Air Development Center under the auspices of NAVAIR (AIR-530) which will further define problem areas and the final scope of the required modifications. The SLEP specification is expected to be available in FY 1983.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		FY 1987		FY 1988		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	\$2,417	4	\$10,888	9	\$17,500	4	\$7,700			18	\$38,505
O&MN Install.			(1)	\$289	(4)	\$1,157	(9)	\$2,601	(4)	\$1,157		5,204
O&MN Factory Trng.				\$300								300
APN-6 Spares				\$1,742		\$1,998		\$1,305				5,045
GRAND TOTAL												\$49,054

Installation Data: Installation will be accomplished by contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: APR-39 Radar Warning Receiver (OSIP 103-81)

Models of Aircraft Affected: OV-10A/D

Description/Justification:

The AN/APR-39 is a lightweight radar warning receiver (RWR) developed by the Army for helicopter and low performance fixed wing aircraft. It is capable of detecting and identifying threat emitters utilized for target acquisition and weapons system control, and displaying direction or arrival information to aircrews, to aid in execution of evasive maneuvers or ECM employment. A digital processor that is interchangeable with the basic systems analog processor is available for missions in higher density threat environments. The AN/APR-39 went into production in FY 1975. The APR-39(V)1 will be installed in 56 OV-10A/D aircraft. Digital equipment for APR-39(V)2 will be provided for 51 OV-10A/D aircraft.

Development Status: The AN/APR-39 was developed by the US Army. Approval for service use (ASU) was granted for the AN/APR-39(V)1 on 29 April 1980.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$50	1	\$2,051	39	\$2,479	16	\$1,400			56	\$5,980
O&MN Install.			(1)	\$16	(1)	\$16	(38)	\$608	(16)	\$256		896
O&MN Factory Trng.				\$18		\$134						152
APN-6 Spares				\$48		\$79						127
GRAND TOTAL												\$7,155

Installation Data: Installation will be accomplished by contractor field teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 21-82)

Models of Aircraft Affected: HH-46A, CH-46D, CH-46E, UH-46D

Description/Justification:

The H-46 tactical navigation (TACAN) systems have demonstrated low reliability and poor maintainability, resulting in both high cost of ownership and degraded Fleet readiness. Reliability data for the ARN-52 in the H-46 series helicopter has established mean flight hours between failure (MFHBF) of approximately 70 hours. In view of the low MFHBF for the ARN-52, all H-46's will be retrofitted with the ARN-118 TACAN. In addition to the significant improvement in MFHBF (typically 1700+ hours in other Navy/Air Force aircraft) an operational improvement of approximately 200-mile (200 to 390 NM) increase in reliable TACAN information plus air-to-air range information will be realized. The AN/ARN-118 is smaller and lighter than the currently installed equipment. Direct replacement is made possible by mounting adapters for installation.

Development Status: The ARN-118 is approved for service use.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	\$589	118	\$2,202	125	\$2,445	103	\$1,979			356	\$7,215
O&MN Install.			(10)	\$1	(82)	\$9	(133)	\$14	(131)	\$14		38
APN-6 Spares				-0-								-0-
GRAND TOTAL												\$7,253

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Cherry Point and Naval Air Rework Facility (NARF) North Island during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: H-46 Safety, Reliability and Maintainability (S,R&M) Update (OSIP 31-81)

Models of Aircraft Affected: CH/UH/HH-46

Description/Justification:

H-46 service life extension to at least the mid-1990's is realistic in view of the status of current planning for a replacement aircraft and present budgetary outlook. This extension of operating life makes corrective action on existing major material deficiencies inherent to the aging H-46 fleet imperative if unacceptable impact on safety, fleet readiness and cost of continued ownership is to be avoided.

Planned items involve changes to ensure adequacy of the basic airframe structure and its integral components and to improve reliability and maintainability of various system components. A detailed analysis of the changes indicates their incorporation will significantly improve safety, aircraft availability (+9.6 percent) and maintenance hours per flight hour (MH/FH - 1.91).

Development Status: No development is necessary but qualification testing of affected parts/components will be required. Contractor installation and flight test will be conducted followed by Navy evaluation at the Naval Air Test Center (NATC), Patuxent River, Maryland.

Project Financial Plan:

	FY 1981		FY 1982		FY 1983		FY 1984		FY 1985	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	\$28,486	3	\$13,695						
O&MN Install.					(4)	\$15,987	85	\$102,391	129	\$134,221
APN-6 Spares		\$507				\$3,128		\$799	(10)	\$4,570
						\$1,462		\$12,920		\$14,642



OSIP 31-81

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	120	\$116,652	17	\$17,546			355	\$428,980
O&MN Install.	(119)	\$36,600	(125)	\$39,760	(97)	\$30,080		114,937
APN-6 Spares		\$15,945		\$3,020				<u>48,516</u>
GRAND TOTAL								\$592,433

Installation Data: To be incorporated during Standard Depot Level Maintenance (SDLM) at Naval Air Rework Facility (NARF) Cherry Point and Naval Air Rework Facility (NARF) North Island.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ALE/APR-39 (OSIP 66-79)

Models of Aircraft Affected: CH-46E

Description/Justification:

The AN/ALE-39 dispensing system is a modified and improved version of the currently operational AN/ALE-29A chaff dispensing set. The AN/ALE-39 system is capable of dispensing expendable chaff, flare, and jammer payloads. All three payloads can be dispensed in both manual (single shot/flare multiple) or programmed (multiple shot) loads. With an interface to a radio frequency (RF) warning receiver or missile warning detector, the AN/ALE-39 is capable of automatically dispensing chaff, flare, or jammer payloads.

The AN/APR-39 is a lightweight radar warning receiver (RWR) developed by the Army for helicopter and low performance fixed winged aircraft. It is capable of detecting and identifying threat emitters utilized for target acquisition and weapon systems control, and displaying missile approach direction information to aircrews to aid in execution of evasive maneuvers or ECM employment. A digital processor that is interchangeable with the basic system analog processor is available for missions in higher density threat environments. The AN/APR-39 went into production in FY 1975. This program is intended to be a joint Army/Marine Corps procurement of Army equipment.

Development Status: The ALE-39 is approved for service use. The AN/APR-39 was developed by the U.S. Army. Approval for service use for the APR-39(V)1 was obtained in April 1980. ASU of the APR-39(V)2 is expected by the second quarter of FY 1983.

Project Financial Plan:

	FY 1979		FY 1980		FY 1981		FY 1982		FY 1983	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		\$1,342		\$654	50	\$1,837	111	\$4,475		
GMN Install.							(13)	\$104	(74)	\$645
Alt-6 Spares						\$91				-0-

OSIP 66-79

Project Financial Plan (Cont'd):

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	94	\$3,410		\$3,974	\$4,200	255	\$19,892	
O&MN Install.	(74)	\$644	(94)	\$819			2,212	
APN-6 Spares		\$352		\$541	\$692		1,675	
GRAND TOTAL							\$23,780	

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and CH-46E conversion.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: H-46 Fiberglass Blades (OSIP 9-78)

Models of Aircraft Affected: CH-46D/E/F, UH/CH/HH-46A

Description/Justification:

The H-46 fiberglass rotor blades will have a fiberglass "D" spar with a titanium erosion strip, fiberglass skin and nomex honeycomb core trailing edge. This construction concept is expected to provide the following characteristics: will not corrode, environmental degradation insignificant, insensitive to small defects, soft failure propagation with a change in stiffness warning, preflight visual inspection only, mean time between removal (MTBR) will increase from 288 hours to 2,500 hours, manufacturing process repeatability will reduce blade tracking and balance time, and procurement cost per blade compared to current blade will remain equivalent.

Development Status: Approval for service use has been granted.

Project Financial Plan:

	<u>FY 1978</u>		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	27	\$11,691	48	\$10,393	56	\$13,465	51	\$14,457	67	\$20,771
O&MN Install. ("O" Level)										
APN-6 Spares		\$383		\$686		\$807		\$1,986		\$2,055

  

	<u>FY 1983</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$15,449	297	\$86,226
O&MN Install. ("O" Level)		-0-		-0-
APN-6 Spares		\$3,747		9,664
GRAND TOTAL				\$95,890

Installation Data: Installation will be accomplished at organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-157(V) IR Jammer (OSFP 22-77)

Models of Aircraft Affected: CH-46E

Description/Justification:

The ALQ-157(V) is an infrared jammer that degrades the capabilities of IR homing missiles posing serious threats to tactical helicopters. Current defenses against IR homing missiles (flare decoys and evasive maneuvers) depend on visual detection of the attack. No warning receiver is available. The ALQ-157(V) provides continuous protection. The equipment consists of two externally mounted transmitter units, an internally mounted electronic control unit, and a pilot's control-indicator. This is a joint Army-Navy program for heavy helicopters with the Navy acting as lead service. The basic jammer or a variant will be applicable to the USMC CH-46E, CH-53A/D and to the Army CH-47C helicopters. The ALQ-157(V) is being manufactured by Xerox Electro-Optical Systems, Pasadena, California.

Development Status: Competitive testing of three engineering development models (EDM's) was completed in late FY 1977 with two of the systems considered capable of meeting the CH-46/47/53 requirements with improvements to be incorporated in production. Further tests/analysis leading to specifications for production test articles accommodating requirements of all candidate helicopters were completed in FY 1978.

Project Financial Plan:

	<u>FY 1977</u>		<u>FY 1979</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,000	1*	\$1,014		\$1,161			111	\$7,973	116	\$8,536
O&MN Install.							(1)	\$8			(111)	\$806
APN-6 Spares										\$1,813		\$1,499

\* Prototype.

OSIP 22-77

Project Financial Plan (Cont'd.):

	<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	34	\$580			262	\$20,269
O&MN Install.	(116)	\$842	(34)	\$247		1,903
APN-6 Spares						<u>3,312</u>
GRAND TOTAL						\$25,484

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Cherry Point during Standard Depot Level Maintenance (SDLM).

Appropriation: APL - Activity 5

Models of Aircraft Affected: CH-46D/E, HH-46

Description/Justification:

Development Status: The radio is being developed under RDT&E,N Program Element Number 2416,N, Project W0661CC. Approval for service use is scheduled for September 1982.

Project Financial Plan:

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Engine Air Particle Separators (OSIP 42-33)

Models of Aircraft Affected: CH-46E

Description/Justification:

The CH-46E (reworked from CH-46D/F's) are equipped with either: (a) nonseparating inlet and barrier screen or (b) the engine air particle separators (EAPS) now installed on the remaining H-46D/F's. The EAPS is a flight proven erosion protection system with low power loss. It has experienced some reliability and maintainability (R&M) problems and cannot be used in any environment where icing exists or is predicted. However the barrier screens impose high power loss, low R&M, and have no anti/de-ice capability. Therefore EAPS are needed as a near term solution to the foreign object damage (FOD) problem and either a redesigned inlet system utilizing the present EAPS or a Heated EAPS (HEAPS) is required for a long term, all weather capability.

Development Status: This system is qualified, and flying on H-46 aircraft.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$3,538	48	\$4,922	43	\$4,641	36	\$4,000		
O&MN					(12)	\$307	(48)	\$1,227	(48)	\$1,227
APN-6				\$74						



OSIP 42-83

Project Financial Plan (Cont'd)

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			127	\$17,101
O&MN	(19)	\$486		3,247
APN-6				<u>74</u>
GRAND TOTAL				\$20,422

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Night Vision (OSIP 66-82)

Models of Aircraft Affected: CH-46E

Description/Justification:

The present and projected threat require low altitude helicopter operations which cannot now be conducted at night due to a lack of adequate night vision equipment. The third generation aviation night vision goggles, with appropriate cockpit lighting modifications for compatibility, will provide a limited capability for the flight crew to regain 25-75 percent of the night time, depending on the geographic location.

Development Status: The Helicopter Night Vision System is being developed under RDT&E, N Program Element Number 64213N. Boeing-Vertol Company, manufacturer of the H-46 helicopter, is under contract to determine an optimum cockpit lighting configuration compatible with third generation night vision goggles. Navy contract award for a prototype aircraft lighting modification for the CH-46E is scheduled for the third quarter FY 1982. TECHEVAL will be completed in the second quarter FY 1982. The goggles are under development by the U.S. Army and are referred to as Aviator's Night Vision Imaging System (ANVIS) or AVS-6. Army DT/OT-II testing is completed and production is expected to be authorized in August 1982. An interim "quick fix" AVS-6 modification is being developed by the Naval Air Test Center (NATC) for the CH-46E. Provisional approval for service use (PACU) is scheduled for June 1982. The quick fix and full lighting modification will be installed in 265 CH-46E aircraft.

OSIP 60-32

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6												
Quick Fix	26	\$1,468	239	\$5,846	28	\$8,263	8	\$11,915	89	\$8,223	60	\$5,865
Full												
O&MN Install.												
AVS-6 Full*							(29)*	\$666	(88)	\$1,953	(89)	\$1,975
O&MN Training		\$80		\$136								
APN-6 Spares		\$336		\$855		\$841						

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6				
Quick Fix			265	\$ 7,314
Full			265	34,266
O&MN Install.				
AVS-6 Full	(60)	\$1,331		5,925
O&MN Training				216
APN-6 Spares				2,032
GRAND TOTAL				\$49,753

\* Includes trainer installation cost in FY 1985.

Installation Data: Quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full AVS-6 kits will be installed at the organizational level by Naval Air Rework Facility (NARF) field teams except for a radar altimeter modification which will be accomplished at depot level. Installations will also be made during the C-46 S&M program to the maximum extent possible.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Glass-Faced Windshield (OSIP 49-80)

Models of Aircraft Affected: CH-53A/D, RH-53D

Description/Justification:

There is a dire need for electrically heated glass/plastic windshields with a glass outer surface to provide the best affordable abrasion resistance to windshield wiper action. The presently installed all plastic windshields are easily scratched by wiper action, particularly in sand and dust environments and require frequent replacement. A scratched windshield presents a hazardous situation, as it greatly inhibits vision, especially in bright sunlight and bright night lighting when landing. The glass-faced windshields, which will be completely interchangeable with the plastic windshields, will eliminate this problem, as well as provide additional protection from small arms fire. The use of glass-faced windshields will result in an estimated weight increase of 10 pounds per aircraft.

Development Status: Navy tests completed in July 1980. Approval for service use is not required.

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	8	\$798	12	\$250	38	\$856	89	\$2,124	51	\$1,281		
O&MN Install.							(25)	\$42	(63)	\$107	(65)	\$110
APN-6 Spares				381		\$174		\$167				

OSIP 49-80

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			198	\$4,919
O&MN Install	(45)	\$76		335
APN-6 Spares				<u>422</u>
GRAND TOTAL				\$5,676

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF, Pensacola) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALE-39 Dispenser Set and AN/APR-39 Radar Warning Receiver (OSIP 68-79)

Models of Aircraft Affected: CH-53A/D

Description/Justification:

The AN/ALE-39(V1) dispensing system is a modified and improved version of the currently operational AN/ALE-29A chaff dispensing set. The AN/ALE-39 system is capable of dispensing expendable chaff, flare, and jammer payloads. All three payloads can be dispensed in both manual (single shot/flare multiple) or programmed (multiple shot) loads. With an interface to an RF warning receiver or missile warning detector, the AN/ALE-39 is capable of automatically dispensing chaff, flare, or jammer payloads.

The AN/APR-39 is a lightweight radar warning receiver (RWR) developed by the Army for helicopter and low performance fixed wing aircraft. It is capable of detecting and identifying threat emitters utilized for target acquisition and weapon systems control, and displaying direction of arrival information to aircrews. The AN/APR-39(V1) went into production in FY 1975. This program will be a joint Army/Marine Corps procurement of Army equipment.

Development Status: The AN/ALE-39 was approved for service use in February 1976 and is in production. The AN/APR-39(V1) was approved for service use in April 1980.

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$326	90	\$2,886	91	\$2,933		\$7,721	181	\$13,866
O&MN Install.					(60)	\$952	(121)	\$1,744		2,697
APN-6 Spares				\$93		\$229		\$926		1,248
GRAND TOTAL										\$17,811

Installation Data: AN/ALE-39 and AN/APR-39(V1) AFC kit installations will be accomplished by contractor field teams at the squadrons. APR-39(V2) will be installed at the squadron level by replacing the AN/APR-39(V1) analog processor weapon replaceable assembly (WRA) with the AN/APR-39(V2) digital processor (WRA).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-157(V) IR Jammer (OSIP 69-79)

Models of Aircraft Affected: CH-53A/D

Description/Justification:

The ALQ-157(V) is an infrared jammer that degrades the capabilities of IR homing missiles posing serious threats to tactical helicopters. Current defenses against IR homing missiles (flare decoys and evasive maneuvers) depend on visual detection of the attack. No warning receiver is available. The ALQ-157(V) provides continuous protection. The equipment consists of two externally mounted transmitter units, an internally mounted electronic control unit, and a pilot's control-indicator. This is a joint Army-Navy program for heavy helicopters with the Navy acting as lead service. The basic jammer or a variant will be applicable to USMC CH-46E, CH-53A/D and to Army CH-47C helicopters. The ALQ-157(V) is being manufactured by Xerox Electro-Optical Systems, Pasadena, California.

Development Status: Competitive testing of three EDM's was completed in late FY 1977 with two of the equipments considered capable of meeting the requirements, with improvements to be incorporated in production. Further tests/analysis leading to specifications for production test articles accommodating requirements of all candidate helicopters were completed in FY 1978. In August 1979, a contract was awarded to Xerox Electro-Optical Systems for production of twelve system test models for the ALQ-157. Testing leading to approval for service use (ASU) is to be complete during the fourth quarter of FY 1982 with ASU in February 1983. The current contract with Xerox contains fixed price options for the first year (FY 1983) production.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$600		\$935	1*	\$353	87	\$6,750	86	\$6,378		
O&MN Install.							(1)*	\$8	(46)	\$339	(59)	\$436
APN-6 Spares								\$1,161		\$1,053		

\* Prototype.

OSIP 69-79

Project Financial Plan (Cont'd.):

	<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5					174	\$15,016
O&MN Install.	(50)	\$370	(13)	\$133		1,286
APN-6 Spares						<u>2,214</u>
GRAND TOTAL						\$18,516

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NAHF) Pensacola during Standard Depot Level Maintenance (SDLM).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Armored Pilot Seats (OSIP 43-83)

Models of Aircraft Affected: CH-53A, CH-53D, RH-53D

Description/Justification:

Personnel currently survive helicopter crashes only when the crash impact is light and the structural integrity of the seat/restraint system is not compromised. The proposed armored seats will provide improved helicopter crash survivability consistent with direction of the Chief of Naval Operations. Early incorporation of impact protection to meet the dynamic requirements based on USAVLABS Technical Report 70-22 will save a substantial number of lives currently being lost in helicopter operations.

Development Status: Crashworthy crew seats have been tested and approved for service use under the CH-46E SLEP. In addition, crashworthy crew seats are being installed in the U.S. Army Black Hawk and U.S. Navy derivative Sea Hawk.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$7,944	70	\$5,383	70	\$5,922	9	\$864			197	\$20,113
O&MN Install.			(18)	\$436	(65)	\$1,372	(60)	\$1,266	(54)	\$1,140		4,214
O&MN Factory Training		\$100		\$100								200
APN-5 Spares		\$393		\$468		\$346						1,207
GRAND TOTAL												\$25,734

1 Kit = 2 seats w/identical armor.

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Night Vision (OSIP 67-82)

Models of Aircraft Affected: CH-53A/D, RH-53D, CH-53E

Description/Justification:

The present and projected threat requires low altitude helicopter operations which cannot now be conducted at night due to a lack of adequate night vision equipment. The third generation Aviation Night Vision Goggles, with appropriate cockpit lighting modifications for compatibility, will provide a limited capability for the flight crew to regain 25-75 percent of the night time, depending on the geographic location.

Development Status: The Helicopter Night Vision System is being developed under RDT&E,N Program Element Number 64213N. Sikorsky Aircraft Company, manufacturer of the H-53 helicopter, will determine an optimum cockpit lighting configuration compatible with third generation night vision goggles. Navy contract award for a prototype aircraft lighting modification for the CH-53 cockpit is scheduled for the third quarter of FY 1982. DT/OT-II will be completed in the second quarter of FY 1983 and approval for service use (ASU) will be requested in February 1983. The goggles are under development by the U.S. Army and are referred to as Aviator's Night Vision Imaging System (ANVIS) or AVS-6. Army DT/OT-II testing will be completed in October 1981 and production is expected to be authorized in March 1982. An interim "quick fix" AVS-6 modification is being developed by the Naval Air Test Center (NATC) for the CH-53E. Provisional approval for service use (PASU) is scheduled for January 1982. The quick fix and full lighting modification will be installed in 138 CH-53A/C aircraft, 23 RH-53D aircraft and 47 CH-53E aircraft.

OSIP 67-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6												
Quick Fix	10	\$718	198	\$2,760								
Full					11	\$4,137	70	\$9,179	70	\$9,968	57	\$5,362
O&MN Install.							(11)	\$288	(70)	\$1,403	(70)	\$1,403
O&MN Training		\$40				\$60						
APN-6 Spares		\$167		\$373		\$425		\$716		\$752		\$643

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6				
Quick Fix			208	\$ 3,476
Full			208	28,646
O&MN Install.	(57)	\$1,142		4,236
O&MN Training				100
A.N-5 Spares				3,076
GRAND TOTAL				\$39,536

Installation Data: Quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full AVS-6 kits will be installed at the organizational level except for a radar altimeter modification which will be accomplished at depot level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AH-1 Infrared Suppression (OSIP 30-77)

Models of Aircraft Affected: AH-1J, AH-1T, UH-1N

Description/Justification:

The infrared suppression (IRS) for the H-1 is designed to reduce/preclude attack by heat-seeking (IR) missiles such as the SA-7. Each unit (1 per engine) weighs approximately 25 pounds (50 pounds/aircraft) and can be installed in the field by replacing the standard engine tailpipe extension with the IRS unit in approximately 45 minutes. No additional internal aircraft space is required; however, aircraft structural provisions (hard points) must be installed at depot level or by contractor field team (65 manhours initial provisioning) prior to kit installations. The IRS kit is designed as a mission kit for field installation as required.

The airframe change kit consists of all bracketry, mounting hardware and fasteners required to support the installation of the IR Suppressor. A/C kits are permanently installed.

The IR Suppressor consists of the specially designed engine exhaust stacks and IR signature reducing shields. The exhaust stacks are designed to introduce cooler ambient air into the hot engine exhaust flow, thus cooling the exhaust itself and also the airflow management system. This reduces the IR signature of the aircraft. Shields are used to mask hot engine components in the airflow management system, again reducing the IR signature.

Development Status: Development is complete. UH-1N nonrecurring and validation kits are on contract. This program will procure additional A and B kits. Approval for service use is not required.

OSIP 30-77

Project Financial Plan:

	<u>FY 1973</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,484	100	\$2,448		\$210	140	\$2,604		
O&MN Install.									(100)	\$343
APN-6 Spares								\$211		

	<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$4,583		\$6,300	240	\$18,629
O&MN Install.	(140)	\$480				823
APN-6 Spares		\$562				833
GRAND TOTAL						\$20,285

Installation Data: Installation of the airframe change kit will be accomplished by contractor field teams on site at East and West Coast Marine Corps facilities.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: APR-44 (OSIP 24-82)

Models of Aircraft Affected: UH-1N

Description/Justification:

The APR-44 is an Army developed continuous wave (CW) warning receiver intended for use on helicopters. Total installed weight is approximately 4 pounds, size is 33 cubic inches. The system is required by Marine Corps assault helicopters that currently have no CW warning system. Provisions and APP-44's will be installed in 139 UH-1N's.

Development Status: Development by the U.S. Army was completed in FY 1979. Navy tests will be conducted during FY 1982. Approval for service use is planned for April 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$923	41	\$2,260	98	\$2,403			139	\$1,586
O&MN Install.					(41)	\$441	(98)	\$1,054		1,495
APN-6 Spares				\$263		\$372				635
<b>GRAND TOTAL</b>										<b>\$7,716</b>

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities on East and West Coasts.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: H-1 AN/ALQ-136 (OSIP 26-32)

Models of Aircraft Affected: AH-1J/T

Description/Justification:

The AN/ALQ-136 is an Army developed high band defensive electronic countermeasures (DECM) system intended for use on helicopters. Total installed weight is 55 pounds and size is 600 cubic inches. The system is required by Marine Corps attack helicopters that currently have no DECM systems. Provisions and ALQ-136's will be installed in 53 AH-1J's and 48 AH-1T's.

Development Status: Development by the U.S. Army has been completed (OT-I in FY 1975, and DT/OT-II in FY 1979). U.S. Army production was awarded in September 1980 (80 units). Navy DT/OT-III is planned for November 1981. Approval for service use is anticipated in April 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$1,984	15	\$2,521	44	\$12,481	42	\$13,537		
O&MN Install.					(10)	\$115	(34)	\$390	(45)	\$516
APN-6 spares				\$385		\$1,799		\$423		

  

	<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			101	\$30,423
O&MN Install.	(12)	\$138		1,159
APN-6 Spares				2,607
GRAND TOTAL				\$34,189

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities at East and West Coast sites.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: APR-44 (OSIP 25-82)

Models of Aircraft Affected: AH-1J/T

Description/Justification:

The APR-44 is an Army developed continuous wave (CW) warning receiver intended for use on helicopters. Total installed weight is approximately 4 pounds, size is 33 cubic inches. The system is required by Marine Corps assault helicopters that currently have no CW warning system. Provisions and APR-44's will be installed in 53 AH-1J's and 48 AH-1T's.

Development Status: Development by the U.S. Army was completed in FY 1979. Navy tests will be conducted during FY 1982. Approval for service use is planned for April 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$858	75	\$3,507	26	\$735			101	\$5,100
O&MN Install.					(46)	\$493	(55)	\$589		1,082
APN-5 Spares				\$449		\$118				567
GRAND TOTAL										\$6,749

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities on East and West Coasts.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ANVIS Night Vision System (OSIP 68-82)

Models of Aircraft Affected: UH-1N

Description/Justification:

In order to improve tactical weapon effectiveness of the UH-1N aircraft, it must have the capability to operate at night and at low levels. Improved cockpit system must be integrated with night vision goggles to meet fly and fight at night operational requirements for UH-1N aircraft.

Development Status: R&D effort is being conducted by the U.S. Army for night vision capability on a UH-1 aircraft. Approval for service use (ASU) is scheduled for the fourth quarter of FY 1983.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6												
Quick Fix	6	\$360.	119	\$1,533								
Full AVS-6					1	\$3,845	46	\$19,319	46	\$13,260	46	\$20,116
O&MN Install.					(1)	\$214		\$214	(46)	\$9,853	(46)	\$9,853
O&MN Factory Training		\$40				\$214						
APN-6 Spares		\$79		\$267		\$19		\$5,016		\$3,395		\$3,566

OSIP 68-82

Project Financial Plan Cont'd):

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6				
Quick Fix			125	\$ 1,893
Full AVS-6			139	61,540
O&MN Install.	(46)	\$2,87		29,987
O&MN Factory Training				254
APN-C Spares				<u>12,342</u>
				\$106,016

Installation Data: Quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full cockpit mod kits will be installed at the contractor's plant. Budget year for the AVS-6 contract will be FY 1982.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ANVIS Night Vision System (OSIP 69-82)/FACTS (FLIR Augmented Cobra TOW Sight) (OSIP 21-84)

Models of Aircraft Affected: AH-1T/J

Description/Justification:

ANVIS: In order to improve tactical weapon effectiveness of the AH-1T/J aircraft, it must have the capability to operate at night and at low levels. An improved cockpit system must be integrated with night vision goggles to meet fly and fight at night operational requirements for AH-1T/J aircraft.

FACTS: IR and EO sensor developments are providing potential enemies with weapons and vehicles with an effective night and adverse weather combat capability. Marine Corps attack helicopters require similar sensor capabilities in order to conduct effectiveness combat operations in comparable environments. An ongoing Army development FACTS (FLIR Augmented Cobra TOW Sight) will provide a night/adverse weather capability to their AH-1S attack helicopters. This project will adapt the Army systems to the Marine Corps AH-1T.

Development Status:

ANVIS: RDT&E,N effort is being conducted by the U.S. Navy for night vision capability on attack helicopters. Approval for service use is scheduled for the fourth quarter of FY 1983.

FACTS: The Army has installed a feasibility model on an AH-1S. Following flight and TOW missile firing tests, two engineering development models will be procured and qualification testing will begin. Approval for service use is scheduled for the fourth quarter of FY 1983.

QCIP 69-82/21-84

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6												
Quick Fix	10	\$454	93	\$1,953								
Full					2	\$6,454	47	\$30,618	52	\$32,252		
FACTS					1	\$1,700	47	\$21,448				
O&MN Install.								\$321	(2)	\$428	(47)	\$10,067
O&MN Training		\$40				\$321						
APN-6 Spares												
ANVIS		\$101		\$479		\$201		\$8,614		\$6,396		
FACTS								\$6,855				

	<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 - AVS-6				
Quick Fix			103	\$ 2,407
Full			101	69,324
FACTS			48	23,148
O&MN Install.	(52)	\$11,138		21,954
O&MN Training				361
APN-6 Spares				
ANVIS				15,791
FACTS				6,855
GRAND TOTAL				\$135,840

Installation Data: AVS-6 quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full cockpit mod kit procurement will begin in FY 1984 and will be installed at the contractor's plant. The FACTS systems will be installed at the contractor's plant.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Communications Central AN/ASC-26 (OSIP 109-83)

Models of Aircraft Affected: UH-1N

Description/Justification:

The ASC-26 Command and Control Communications Central allows the ground commander to maintain radio communications with field troops from an airborne platform. The unit is a mission kit and is installed in the UH-1N without any modification to the airframe. This program is for procurement of 12 mission kits.

Development Status: The AN/ASC-26 OPEVAL was conducted by the Marine Corps in 1979. Aircraft suitability, loading constraints and operational Navy testing were completed by the Naval Air Test Center (NATC) in 1980. No approval for service use (ASU) is required.

Project Financial Plan:

	<u>FY 1983</u>	<u>TOTAL</u>
	<u>Qty</u> <u>Cost</u>	<u>Qty</u> <u>Cost</u>
APN-5		
	\$3,000	\$3,000
OMN Install. ("O" Level)	-0-	-0-
APN-6 Spares	-0-	-0-
GRAND TOTAL		\$3,000

Installation Data: No airframe change is required. The mission kit is installed at the Organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: LAMPS MK I Avionics Improvement (OSIP 8-78)

Models of Aircraft Affected: SH-2F

Description/Justification:

This avionics update includes the improved LN-66HP Radar Set, the AN/ASN-123 Tactical Navigation Set, the AN/ARR-75 Sonobuoy Receiver, the AN/ALR-66 electronic support measure, completion of Fleet retrofit for the AN/AKT-22(V3) Data Link, and DIFAR/DICASS capability which consists of AN/ARC-159(V1) JHF transceiver and the AN/AKT-22(V6) Data Link Update.

During testing in Hawaii, the performance of the LN-66HP radar installed in the SH-2F aircraft was found to be deficient against small surface targets. The following design changes will enable the radar to provide adequate performance against such targets. Changes b. through d. were also evaluated during this testing period. The range against a specific target was approximately doubled. Range on the target of major interest is 17 miles.

- a. Balanced mixer and/or low-noise preamplifier.
- b. IF amplifier bandwidth matching.
- c. Sensitivity time control.
- d. Modify video amplifier coupling.
- e. Extend display range.
- f. Solid state local oscillator (incorporating automatic frequency control).

The AYK-2 analog navigation computer and the PI-429/A plotting board are presently being used by the SH-2 electromechanical devices. In view of current and future LAMPS mission requirements, such a system cannot handle the large variety and amount of sensor data now available in the multisensor SH-2. The AN/ASN-123 system, using the latest technology in cathode ray tube displays, and that of solid state digital processing, has the capability of memorizing and displaying Electronic Surveillance Measures (ESM), Magnetic Anomaly Detection (MAD), sonobuoy drop points, sonobuoy range circles, and DIFAR lines, as well as 10 fly-to-points. The present SH-2 system has a high failure rate and a Mean Time Between Failure (MTBF) of less than 40 hours. The AN/ASN-123 system will have a MTBF of at least 500 hours. The number of subsystems will be reduced from ten to four. The AN/ASN-123 system will include an extensive automatic self-test feature, utilizing the latest solid state integrated circuitry.

OSIP 8-78

Description/Justification (Cont'd):

The AN/ARR-75 Sonobuoy Receiver Set (SRS) receives, demodulates and amplifies Frequency Modulation (FM) sonobuoy transmissions in the VHF band and provides the demodulated output for analysis and display equipment. The receiver is a general purpose multi-channel FM set. The AN/ARR-75 SRS is comprised of two units - control box and receiver. The control unit provides independent selector and meter monitoring of 31 RF channels for each of the four receiver modules.

Due to the current avionics configuration, the SH-2F can only employ AN/SSQ-47 (range-only) sonobuoys. Addition of a DIFAR/DICASS capability to the LAMPS MK I ASW mission will permit the latest sonobuoys to be employed, thus reducing the time to localize or redetect a submarine. The avionics update includes the installation of a modified AN/AKT-22(V)3 Data Link, and an AN/ARC-159(V) Radio Receiver. This will allow the LAMPS MK I to employ SSQ-50 CASS, SSQ-53 DIFAR and SSQ-62 DICASS sonobuoys. Additional tactics will be developed to improve the Fleet capability to prosecute present and future generations of submarine threats.

Development Status:

AN/AKT-22(V)6: This modification will incorporate a Command Signal (Tone) Generator needed for keying CASS/DICASS sonobuoys.

Other equipment required is now in operation and in the Navy inventory. Installation of equipment in the first modified aircraft has been done by Kaman Aerospace Corporation and flight tested aboard a bailed aircraft. This initial modified aircraft commenced testing at NATC, Patuxent River in August 1980. As of June 1981, OPEVAL III for aircraft systems has been completed, except for AN/SQR-17 shipboard compatibility tests.

OSIP 8-78

Project Financial Plan:

	<u>FY 1978</u>		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$7,644		\$3,620		\$12,395		\$15,042		\$4,964
O&MN Install.*						\$13		\$611		\$756
APN-6 Spares		\$1,140		\$3,428		\$3,195		\$1,383		
	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>			
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>		
APN-5		\$3,822						\$47,487		
O&MN Install.*		\$636		\$92		\$85		2,193		
APN-6 Spares								9,146		
GRAND TOTAL								\$58,826		

Installation Data: Installation of the AFC kits for this modification will be done concurrently with SDLM. SDLM for the SH-2F aircraft is currently done by commercial contractor (Hayes International, Dothan, Alabama). Ten SH-2D aircraft currently being modified to the SH-2F configuration (including SDLM) by KAMAN, contract N00019-80-C-0072, will be flown to Hayes for AFC kit installation prior to fleet delivery. (FY 1982 - 1 each, first quarter; 6 each, second quarter; and 3 each, third quarter).

\*Installation Quantities:

FY 80 - 6 ALR-66 Installs (6 at Hayes).  
 FY 81 - 69 ALR-66 Installs (32 at Hayes, 7 at Kaman, 30 by FMT), 24 AIP Phase I Installs (AN/ASN-123, AN/ARR-75, LN-66 MOD, AN/AKT-22(V3)) with 17 at Hayes and 7 at Kaman.  
 FY 82 - 23 ALR-66 Installs at Hayes and 40 AIP Phase I Installs (37 at Hayes and 3 at Kaman).  
 FY 83 - 31 AIP Phase I Installs and 13 AIP Phase II Installs (AN/ARC-159(V1) and DIFAR/DICASS) at Hayes.  
 FY 84 - 40 AIP Phase II Installs at Hayes.  
 FY 85 - 37 AIP Phase II Installs at Hayes



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1993

Appropriation: APN - Activity 5

Modification Title and No.: Composite Tail Rotor Pylon Design Improvement (OSIP 22-84)

Models of Aircraft Affected: MH-2D; NHH-2D; SH-2F

Description/Justification:

The present semi-monocoque aluminum pylon and the aluminum/fiberglass horizontal stabilizer evolved from the original UH-2A/B single-engine helicopter via add-on/beef-up modifications. With growth of the H-2, changing loads and vibratory conditions have led to both internal structure and skin failures throughout the installation. Over the years, non-standard field repairs accomplished as a matter of expediency have contributed to instances of misalignment at critical areas, resulting in numerous failures of the intermediate and tail-rotor gearboxes. The deteriorating pylon situation finally developed into a costly, time-consuming depot overhaul program to produce a standard airworthy unit. In addition, the lengthy overhaul elapsed time, plus pipeline time, have forced procurement of new assemblies in order to reduce the excessive NORS downtime for pylons.

An improved pylon and horizontal stabilizer made of current state-of-the-art composites reinforced with aluminum will significantly reduce the excessive maintenance manhour inherent in the present design at all maintenance levels. Features of the improved pylon stabilizer assembly will include the following:

- a. Primary skin and spar webs of light, stiff composite sandwich, which eliminate most of the present metal stiffening ribs and stringers. Equipment is envisioned to permit skin repair at organizational maintenance level.
- b. Extruded aluminum spar caps allow conventional mechanical fasteners, thus avoiding composite joint development.
- c. Forged aluminum tail rotor gearbox mounting rib. Also, forged aluminum closing bulkhead with integral fittings where the pylon attaches to the aft fuselage. This provides a clean, fatigue resistant structure.
- d. Horizontal stabilizer relocated behind primary pylon structure eliminates holes in the primary structure, thus permitting a continuous beam design. This installation will result in a considerable reduction in the manhours required for stabilizer replacement.
- e. Fiberglass-epoxy box spar in the horizontal stabilizer gives adequate stiffness without an exterior strut, which greatly simplifies the installation.
- f. Eliminates many detail parts found in conventional construction, with a corresponding impact on logistics development risk and the complex tooling requirement an all-composite design would entail are minimized by the judicious mixture of metal and composite.

OSIP 22-64

Description/Justification (Cont'd):

Thirty-one unsatisfactory reports (URs) were generated over the period April 1977 - May 1979. The weight is 1.80 pounds per aircraft.

The following improvements are expected:

		<u>Present</u>	<u>Projected</u>
Mean Time Between Failure	(MTBF)	212	843
Mean Time Between Maintenance	(MTBM)	141	213
Maintenance Hours per Flight Hour	(MH/FH)	0.04	0.03

Development Status: Prototype will be completed in June 1983 with contractor testing to complete in June 1984. Prototype and testing to be accomplished commencing FY 1982 through FY 1984 with RDI&E, N funds (Program Element Number 64219N). Approval for service use is not required.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	32	\$2,817	48	\$3,656	50	\$4,037	130	\$10,510
O&M Install. "O" Level		-0-						-0-
APN-6 Spares		\$378		\$352		\$369		1,099
GRAND TOTAL								\$11,609

Installation Data: Installation will be accomplished by organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: SH-3 Service Life Extension/Update Program (OSIP 46-83)

**Models of Aircraft Affected:** SH-3H/SH-3G/3H-3D

Description/Justification:

The SH-3H SLEP program will extend the service life of the SH-3H for 10 years. This program will address only the items in the H-3 airframe that are unreliable or in a severely degraded mode. This modification will include extensive rework of the dynamic components, correction to areas of severe airframe corrosion, installation of a digital flight control system to replace the unreliable out-moded analog flight controls, installation of a Bifilar Head to reduce dynamic vibrations in the airframe, modified webbing in the aircraft structure to alleviate cracking, replacement of the present unreliable emergency flotation gear, rewiring of the aircraft electrical system, and installation structure and kits for crashworthy seats.

Development Status: Contractor testing of critical components will be performed on pilot production aircraft. Government testing at NATC will be performed to verify flight characteristics. No OT&E required.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$18,685	12	\$37,389	22	\$71,714	45	\$95,077	48	\$119,400
O&MN Install.		\$750		\$750	(2)	\$7,110	(12)	\$7,110	(22)	\$13,085
APN-6 Spares		\$954		\$3,177		\$8,600		\$18,152		\$14,062
	<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5					129	\$342,265				
O&MN Install.	(45)	\$26,663	(48)	\$28,440		78,908				
APN-6 Spares						44,945				
GRAND TOTAL						\$466,118				

Installation Data: Installation will be accomplished by a contractor drive-in mod line.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: 1-3C MAD System Integration (OSIP 31-22)

Models of Aircraft Affected: P-3C

Description/Justification:

This modification enhances the ASQ-81 magnetic anomaly detection (MAD) system on 192 P-3C aircraft by providing a compensation group adapter (CGA) for aircraft magnetic compensation. This modification also installs ASQ-81 MAD systems on 47 P-3C aircraft that are currently equipped with obsolescent ASQ-10 systems.

Development Status: Both the MAD CGA and the AN/ASQ-81 obtained approved for service use in July 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 (CGA&IMP/ASQ-81)	45/0	\$3,175	73/0	\$5,356	74/15	\$11,679	0/22	\$8,056	0/10	\$4,005
O&MN Install.			(18/0)	\$578	(70/0)	\$2,249	(66/0)	\$2,121	(38/12)	\$3,357
APN-6 Spares		\$417		\$897						

	<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 (CGA&IMP/ASQ-81)							192/47	\$32,281
O&MN Install.	(0/12)	\$2,146	(0/12)	\$2,146	(0/11)	\$1,967		14,574
APN-6 Spares								1,314

GRAND TOTAL \$48,169

Installation Data: The contractor will build and install CGA and MAD improvement kits via field team. ASQ-81 kits will be installed via drive-in modification at the contractor's facility.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: P-3C IACS Low Data Rate Aircraft System (OSIP 22-78)

Models of Aircraft Affected: P-3C

Description/Justification:

The integrated acoustic communication system (IACS) low data rate aircraft system retrofit will provide initial capabilities to start satisfying the requirements of SOR S23-42. The retrofit will provide Naval aviation with a tactical acoustic communication system consisting of a message memory unit (location optional), a NAVCOM panel, a sensor station panel, and an interconnect harness. The low data rate aircraft system will be capable of generating a set of simultaneous audio tones which when transmitted by the aircraft UHF will key the sonobuoy to transmit the applicable acoustic information into the water. A message will be received by the aircraft VHF receiver, conditioned by the low data rate system and processed in the AQA-7 processor for hard copy display of the received message. This modification addresses 189 P-3 Aircraft (115 P-3 NUDES, 30 P-3C UD-I and 44 P-3C UD-II).

Development Status: IACS was approved for service use (ASU) in December 1980.

Project Financial Plan:

	FY 1979		FY 1981		FY 1982		FY 1983		FY 1984		FY 1985	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	24	\$1,459	42	\$1,836	64	\$3,008	59	\$3,705				
APN-5 Install.	(24)	283										
Total APN-5		\$1,752		\$1,836		\$3,008		\$3,705				
O&MN Install.							(36)	\$369	(57)	\$703	(48)	\$591
APN-5 Spares		\$314		\$283		\$451						

OSIP 22-78

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.			189	\$10,018
APN-5 Install.				283
Total APN-5				\$10,301
O&MN Install.	(30)	\$369		2,032
APN-6 Spares				1,048
GRAND TOTAL				\$13,381

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: HARPOON (OSIP 104-79)

Models of Aircraft Affected: P-3A/B/C

Description/Justification:

This installation will give the P-3 aircraft a capability to carry and launch four HARPOON missiles. Provisions for the HARPOON Airborne Command and Launch System (HACLS) (AWG-19) include standard wing pylons, wing wiring, interconnecting cables within the fuselage and the following equipment:

- a. Data processor.
- b. Logic unit.
- c. Control panel.
- d. Auxiliary armament interconnect unit.
- e. Power distribution box.
- f. Junction box.
- g. HARPOON Missile Simulator.

The U. S. Navy has an urgent requirement for an offensive/defensive all-weather, medium range, air-to-surface missile capability. The HARPOON missile, in conjunction with the P-3 weapon system, will provide an effective worldwide sea control vehicle that can destroy a surfaced submarine, a high-speed surface missile launcher, or any ocean-going military target with minimum risk to U. S. Navy forces. The P-3 force with the addition of HARPOON missiles provides the only worldwide ocean presence that can respond to interdictive roles such as the PUEBLO or MAYAGUEZ incidents, as well as provide protection for sea lines of communication and trade route coverage to ensure the critical flow of raw materials and oil supplies necessary for maintenance of our nation's industrial requirements. The need for this long-range protective vehicle is particularly critical in remote areas like the Indian Ocean where tactical aircraft are not normally available. The P-3 aircraft, when HARPOON equipped, will make a major contribution to the Navy's anti-surface ship warfare and surveillance capability at a relatively small cost. This modification addresses 304 P-3 aircraft (145 P-3C, 112 P-3B and 47 P-3A).

Development Status: Approval for service use of the HARPOON weapon system was obtained in February 1981.

OSIP 104-79

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	20	\$6,791	28	\$9,562	21	\$9,636	40	\$21,448	43	\$29,971	42	\$26,448
APN-5 Install.	(20)	1,493										
Total APN-5		\$8,284		\$9,562		\$9,636		\$21,448		\$29,971		\$26,448
O&MN Install.					(21)	\$2,310	(25)	\$2,980	(29)	\$3,798	(49)	\$6,793
APN-6 Spares		\$502		\$7						-0-		
	<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	54	\$62,098	51	\$53,813							304	\$219,767
APN-5 Install.												1,493
Total APN-5		\$62,098		\$53,813								\$221,260
O&MN Install.	(37)	\$5,899	(42)	\$6,717	(48)	\$9,381	(33)	\$7,558		\$2,370		47,806
APN-6 Spares												509
GRAND TOTAL												\$269,575

Installation Data: Installation will be accomplished by contractor field team.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Triple Vernier and DICASS Improvements to AQA-7 (OSIP 24-79)

Models of Aircraft Affected: P-3B/C

Description/Justification:

This program will incorporate two new capabilities into the P-3 AQA-7 acoustic processing subsystem, triple vernier and DICASS. It has been demonstrated that a frequency vernier greatly increases an acoustic sensor operator's recognition and classification capabilities. This increase in capability is greatly needed to meet the submarine threat of the 1980's. The technique expands a portion of the acoustic spectrum on the display providing increased resolution and recognition differential. This modification includes an update to the AQA-7 control panel for improved man/machine interface. The Triple Vernier portion of this program is applicable to 167 P-3C (115 P-3C NUDES and 52 P-3C UD-I/II). The Triple Vernier Interactive Control Panel (ICP) is applicable to 223 P-3 aircraft (115 P-3 NUDES, 30 P-3C UD-I and 78 P-3C UD-II).

The DICASS capability provides long range, single sonobuoy targeting information which is essential for the fast-moving submarine threat. This modification is applicable to 252 P-3 aircraft (115 P-3C NUDES, 85 P-3C UD-I/II, and 52 P-3B MOD).

Development Status: The vernier capability is presently incorporated in the modified version of the AQA-7 which is active in the Fleet. The additional capability planned in this program will provide two additional verniers. It is a minor modification to the system which has been developed and will not require approval for service use. The DICASS capability has been successfully evaluated by COMOPTEVFOR utilizing a P-3 aircraft. Provisional approval for service use (PASU) was received in September 1978 with full approval for service use scheduled for second quarter FY 1982.

OSIP 84-79

Project Financial Plan:

		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
		<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 (3V/DICASS)	89/76		\$12,377	78/123	\$17,432		\$15,761		\$16,914		\$26,755		\$27,012
O&MN Install.							\$1,738		\$11,177		\$9,114		\$7,529
APN-6 Spares			\$976		\$3,953		\$2,654		\$1,549		\$3,333		\$4,544

	<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$2,681	167/199	\$118,932
O&MN Install.		\$4,755		\$4,313
APN-6 Spares				<u>17,106</u>
GRAND TOTAL				\$170,354

Installation Data: Installation of AFC kits will be accomplished by contractor field teams and organizational level. Component modification will be accomplished by factory turn-around program.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: P-3C Inertial OMEGA Update (OSI# 47-81)

Models of Aircraft Affected: P-3C

Description/Justification:

The LTN-72 Navigation System is a more sophisticated, reliable, self contained, all weather easy to maintain worldwide navigation system that is independent of ground-based navigation aids. The LTN-72 is a replacement for the ASN-84 which historically has had a high failure rate, is difficult to maintain, piece parts are obsolete and no longer in production, and is a frequent cannibalization item. This change affects 167 P-3C aircraft (115 P-3C NUD (Non-Update), 22 P-3C UD-II (Update II) and 30 P-3C UD-I (Update I)).

The LTN-211 OMEGA Navigation System (ONS) is a low cost stand alone commercial set built to ARINC 599 standards. It provides automatic and direct read-outs for latitude/longitude, waypoints distance to go, digital outputs for horizontal situation indicator (HSI), automatic flight control, etc. Current commercial reliability design is to 1500 hours MTBF. The ONS consists of a receiver processor unit, control display unit and an antenna. Performance accuracy is expected to be less than 3 NM. This affects 115 P-3C NUD aircraft.

Development Status: LTN-211 obtained approval for service use in January 1981. LTN-72 obtained approval for service use in October 1979.

Project Financial Plan:

	FY 1981		FY 1982		FY 1983		FY 1984		FY 1985	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 (LTN-72/LTN-211) 23/4		\$7,084	45/45	\$13,509	45/45	\$16,950	36/3	\$13,103	18/18	\$7,600
O&MN Install.					(34/12)	\$3,936	(49/48)	\$6,655	(48/37)	\$6,166
APN-6 Spares		\$1,450		\$1,801						

OSIP 47-81

Project Financial Plan (Cont'd):

	<u>FY 1986</u>	<u>TOTAL</u>
	<u>Qty</u> <u>Cost</u>	<u>Qty</u> <u>Cost</u>
APN-5 (LTN-72/LTN-211)		167/115\$58,246
O&MN Install.    (36/18)	\$4,280	21,037
APN-6 Spares		<u>3,251</u>
GRAND TOTAL		\$82,534

Installation Data: Installation will be accomplished by contractor field teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Infrared Detecting System (IRDS) (OSIP 57-72)

Models of Aircraft Affected: P-3A/B/C

Description/Justification:

IRDS is an electro-optical surveillance system capable of recognizing and identifying surface targets including submarine periscopes and snorkels under direct nighttime conditions. The system consists of a night imaging sensor and associated electronics and display. A video recorder will be used in conjunction with the system. It will be capable of inflight recording and provide video film for postflight analysis. The IRDS installation displaces the KA-74 camera system. Therefore an optical window is being provided for the flight station escape hatch for use with a hand held camera. An auxiliary display is provided for the TACCO station in P-3C aircraft.

Development Status:

1. Interim IRDS - 11 Hughes GFE Systems for 66 Pod mounted P-3A/B/C aircraft, 4 Texas Instrument (TI) GFE Systems for 16 pod mounted P-3B aircraft. Production Hughes systems commenced delivery in December 1972. Flight test completed March 1973 with Hughes system. TI system commenced delivery in September 1975; flight test completed November 1975. Aircraft have been deployed with AN/AAR-37 and AN/AAR-40 systems.

2. Production AN/AAS-36 IRDS - Planned for 304 nose mounted P-3A/B/C aircraft (145 P-3C, 112 P-3B and 47 P-3A). Production AN/AAS-36 IRDS commenced delivery in October 1978. Approval for service use was received August 1979.

OSIP 57-72

Project Financial Plan:

	<u>FY 1972</u>		<u>FY 1973</u>		<u>FY 1974</u>		<u>FY 1975</u>		<u>FY 1976</u>		<u>FY 1977</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	15	\$5,945			51	\$4,498	16	\$727				\$1,305
APN-5 Install.												
Total APN-5		\$5,945				\$4,498		\$727				\$1,305
O&MN Install.			(11)	\$56	(9)	\$66	(34)	\$265	(24)	\$237	(4)	\$51
	<u>FY 1977</u>		<u>FY 1978</u>		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	12*	\$1,722	55**	\$13,247**	50	\$14,685	70	\$24,838	49	\$19,423	24***	\$18,397***
APN-5 Install.	(11)	293	(33)	896	(26)	702						
Total APN-5		\$2,015		\$14,143		\$15,387		\$24,838		\$19,423		\$18,397
O&MN Install.									(28)	\$2,016	(56)	\$4,822
APN-5 Spares				\$2,509		\$103				\$434		
	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	24	\$20,124	19	\$21,489		\$29,042		\$34,061		\$6,308	385	\$215,811
APN-5 Install.												1,891
Total APN-5		\$20,124		\$21,489		\$29,042		\$34,061		\$6,308		\$217,702
O&MN Install.	(24)	\$1,967	(24)	\$1,967	(24)	\$1,967	(24)	\$1,967	(4)	\$328		15,719
APN-5 Spares		-0-										3,046
GRAND TOTAL												\$236,467

- \*Includes one P-3C prototype with AAS-36.
- \*\*Includes one P-3B prototype with AAS-36.
- \*\*\*Includes one P-3A prototype with AAS-36.

Installation Data: Installation will be accomplished by NARF and Contractor field teams. Production leadtime is 18 months.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: P-3A/B/C PARKHILL (KY-75) (OSIP 71-82)

Models of Aircraft Affected: P-3A/B/C

Description/Justification:

The KY-75 PARKHILL provides HF secure voice capability to satisfy DOD policy with respect to tactical voice communications.

Development Status: The PARKHILL system has been developed for joint service use and has received approval for service use. P-3C aircraft installation will be verified by FOT&E. KY-75 is being procured by the National Security Agency.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	3	\$3,945	94	\$1,296	150	\$2,886	154	\$2,968		
O&MN Install.					(18)	\$675	(96)	\$3,599	(114)	\$4,273
APN-6 Spares				-0-						

  

	<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5					401	\$11,095
O&MN Install.	(119)	\$4,460	(54)	\$2,024		15,031
APN-6 Spares						-0-
GRAND TOTAL						\$26,126

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1982

Appropriation: APN - Activity 5

Modification Title and No.: P-3B Special Project Aircraft (OSIP 29-82)

Models of Aircraft Affected: P-3B

Description/Justification:

This modification replaces obsolescent equipment in four P-3B Special Project Aircraft by means of:

- a. Procurement of common Navy systems for increased capability, reduced operator workload and common logistics.
- b. Installation and support of special mission equipment provided by Intelligence Agencies.
- c. Update of RF distribution hardware for selected intelligence gathering subsystems.
- d. Procurement of special mission equipment as directed by the Chief of Naval Operations.

Development Status: Approval for service use is not required.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$3,098	2	\$4,623	1	\$3,885			4	\$11,606
O&MN Install.			(1)	\$562	(2)	\$1,124	(1)	\$562		2,248
APN-6 Spares		\$315		\$424		\$312				<u>1,051</u>
GRAND TOTAL										\$14,905

Installation Data: Installation will be accomplished by drive-in Mod at the Naval Air Rework Facility (NARF) or the Naval Air Development Center (NADC).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: P-3C Doppler Track System Integration (OSIP 47-83)

Models of Aircraft Affected: P-3C

Description/Justification:

This modification enhances target localization capability by the addition of acoustic doppler tracking to the AQA-7 system. This program does not require any aircraft modification and is applicable to 223 P-3C aircraft (115 P-3C NUDS (Non-Update), 30 P-3C UD-I (Update I) and 78 P-3C UD-II (Update II)). There are two AQA-7 systems per aircraft for a total of 446 component modifications.

Development Status: AQA-7 is currently approved for service use. The doppler tracking function is being developed under RDT&E,N Program Element Number 64221N and will complete TECHEVAL in September 1982. OPEVAL will complete in December 1982 and approval for service use is scheduled for January 1983.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	44	\$2,710	140	\$5,037	140	\$5,770	122	\$3,385			446*	\$16,902
J&MN Install.			(44)	\$2,262	(140)	\$7,197	(140)	\$7,197	(122)	\$6,272		22,328
APN-6 Spares		\$354		\$1,006		\$1,154						2,514
GRAND TOTAL												\$42,344

\* Two boxes per aircraft.

Installation Data: This is a vendor modification turn-around program with organizational level installation.

Appropriation: APN - Activity 5

Models of Aircraft Affected: P-3A/B

The present P-3A/B electronic sensor monitoring (ESM) system, ALD-2B, is obsolete and lacks the required sensitivity, frequency coverage and bearing accuracy for threat warning. The ALR-66 is a current technology ESM system which will replace the ALD-2B and satisfy the above stated deficiencies. The ALR-66 will provide automatic indication of the bearing, range and classification of each threat radar transmission. The ALR-66 is designed so that its threat library can be updated at the organizational level without hardware modification.

Project Financial Plan:

Installation Data: Installation will be accomplished on-site by Naval Air Rework Facility (NARF) field teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EP-3E/B CILOP (OSIP 48-81)

Models of Aircraft Affected: EP-3E/B

Description/Justification:

The service life of the EP-3E inventory of ten aircraft is predicted to expire during the 1981 through 1984 timeframe based upon current operational flight hour utilization and fatigue life projections of the basic airframe structure. This expiration of aircraft service life is mandatory unless aircraft structural inspection is scheduled and individually determined "levels of rework" of the basic airframe and wing structure are undertaken to extend their useful service life.

Prior year EP-3E/B avionics modifications (OSIP 17-78) corrected Board of Inspection and Survey (BIS) deficiencies reported since 1972 by; funding installation of manually operated state-of-the-art digital Direction Finding (DF) antenna subsystems, replacing the unreliable/obsolescent APS-20 radar, modifying the high gain BIG LOOK antenna for digital control/output, and modifying other mission avionics subsystems (ALR-60, HF receiver, RF distribution and Displays) to improve reliability/performance. These modifications were designed for compatibility with planned weapon system operational improvements to semi-automate system operations. Included is the installation of equipments to interface Fleet Satellite Communications (FLTSATCOM) nets, secure communications nets, and data links.

The ten EP-3E inventory aircraft will commence a periodic Service Life Extension Program (SLEP) inspection program during the FY 1982/1985 timeframe to extend their respective service life to 1996-2001. This CILOP will procure, install and integrate: (1) an Airborne Electronic Warfare Support Measure (ESM) Data Analysis System (AEDAS), ARC-156 (UHF), ARC-157 (HF) transceivers compatible with Satellite Communication (SATCOM) (UHF) and Link 11 HF data links respectively, and one KY-75 (HF) and two KY-58 encoders; (2) an Automated Radar Pattern Recognition (ARPR) subsystem and OMEGA Navigation, ARN-101 (LORAN C-D) and LTN-72 (Inertial NAV) subsystems; (3) High Resolution Multi-purpose Displays; and (4) a Spread Spectrum Intercept System (SSIS) subsystem (ALR-71). Specifically, FY 1981 funding will provide Data Link capability and the Airborne ESM Data Analysis System (AEDAS). FY 1982 will provide for the installation/integration of ARPR (new capability) and Navigation Modification (NAVMOD) (enhanced capability) initiatives to meet current operational requirements.

Development Status: Development/test of AEDAS (PE 64255) and Communications Management Terminal (CMT) modification/integration commenced in FY 1977 and was completed in December 1980. Development/test of ARPR (PE 63206) commenced in FY 1977 and completion of OT&E is scheduled for March 1982. Development/test of High Resolution Multi-Purpose Displays (PE 64255) commenced in FY 1980 and will be completed June 1982. SSIS (ALR-71) EDM (PE 63206) will complete T&E tests in June 1982 and ASU is planned for October 1983. The remaining equipments to be installed will have Approval for Service Use/Provisional Approval for Service Use.

OSIP 48-81

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	12*	\$11,849	12*	\$11,500	12*	\$19,940	12*	\$12,046			12*	\$55,335
O&MN Install.			(12)	\$481	(12)	\$1,046	(12)	\$1,046	(12)	\$523		3,096
APN-6 Spares		\$225		\$1,844		\$895		\$3,109				6,073
GRAND TOTAL												\$64,504

\*12 aircraft total

Installation Data: Prototype installation(s) of subsystems will be accomplished by the Naval Air Rework Facility (NARF) during the Service Life Extension Program (SLEP)/Standard Depot Level Maintenance (SDLM); production aircraft kits/Government furnished equipment (GFE) will be installed during SLEP/SDLM cycle when possible, or by drive-in mod or field team mod.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EP-3E/B Sensor Update (CILOP) (OSIP 51-83)

Models of Aircraft Affected: EP-3E

Description/Justification:

This program provides for the modification of four P-3A aircraft to baseline EP-3 configuration/capability by: (1) incorporation of soft landing and fuel dump provisions (AFC-188), (2) replacement of T56-A-10 engines with T56-A-14 engines (PPC-26), (3) structural beefup to increase max gross take-off weight from 127,500 to 142,000 pounds, (4) installation of standard EP-3 COMM-NAV-IFF (CNI) equipments, and (5) procurement and installation of required mission avionics equipment, radomes and antennas prerequisite to installation and integration of EP-3 Sensor Update. These four aircraft mods are required as pipeline assests to initiate implementation of EP-3 Sensor Update without incurring serious and major impact on Fleet operational readiness during the production phase of the program.

Development Status: No development or test is required since the baseline EP-3 configuration is service approved.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$8,260	2	\$9,154			4	\$17,414
O&MN Install.	(1)	\$1,700	(2)	\$3,400	(1)	\$1,700		6,800
APN-6 Spares		\$218		\$306				524
GRAND TOTAL								\$24,738

Installation Data: Aircraft modifications will be accomplished by commercial contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Flight Control System Mod (OSIP 93-79)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

In S-3A Navy Preliminary Evaluation (NPE) and Board of Inspection and Survey (BIS) trials, the Naval Air Test Center (NATC) reported several flying qualities deficiencies that limit the mission capabilities of the aircraft and adversely influence safe operation. In 1975 a systematic re-evaluation of the flight control system was undertaken to define a set of flight control system modifications that offers improvement without degradation. Through extensive analysis, simulation, and flight test, a modification package has emerged which resolves three separate problems: increased elevator authority in the landing configuration (ability to cope with more mistrim than is now possible), decreased elevator authority in high speed tactical flight (less sensitivity in high speed dashes), and adequate control authority after loss of both hydraulic systems (emergency system now installed is adequate to return for landing but questionable during landing and rollout). The flight testing has included both land and sea based trials. In all cases, pilot reaction has been highly favorable.

Development Status: Development and testing of the flight control system modification is complete.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	3	\$5,251	56	\$10,268	58	\$9,505	58	\$10,649			175	\$35,673
APN-5 Install.	(3)	143										143
Total APN-5		\$5,394		\$10,268		\$9,505		\$10,649				\$35,816
O&MN Install.					(57)	\$3,232	(58)	\$3,313	(57)	\$3,256		9,808
APN-5 Spares				\$1,130		\$1,057		-0-				2,187
GRAND TOTAL												\$47,811

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: FLIR Reliability Improvement (OSIP 102-79)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The forward looking infrared (FLIR) system currently installed in the S-3A has consistently exhibited low reliability. This improvement will result in a FLIR installation which incorporates the major components currently installed in the P-3C and A-7 aircraft FLIR systems. These systems are currently exhibiting a reliability more than three times higher than the present S-3A system mean time between failure (MTBF) of 175 hours versus 49 hours.

Development Status: Development effort will consist of production engineering required to repackage the existing P-3C/A-7 FLIR components into the S-3A FLIR weapons replaceable assemblies (WRA's).

Project Financial Plan:

	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$907	5	\$6,667	12	\$4,529	40	\$8,775	40	\$8,223
O&MN Install.					(5)*	\$100	(12)	\$277	(40)	\$811
O&MN Training								\$343		
APN-6 Spares				\$239		\$1,719		\$1,415		\$1,650

OSIP 102-79

Project Financial Plan (Cont'd):

	<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	40	\$10,262	31	\$8,906			168	\$48,269
O&MN Install.	(40)	\$811	(40)	\$811	(31)	\$628		3,438
O&MN Training								343
APN-6 Spares		\$3,600						<u>8,623</u>
GRAND TOTAL								\$60,673

\* Includes one prototype.

\* Installation Data: Installation will be accomplished by a contractor component update program.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-182 Combination Radio (OSIP 45-82)

Models of Aircraft Affected: S-3A, KS-3

Description/Justification:

The AN/ARC-182 combination radio is a new radio planned for installation in Navy tactical aircraft to provide VHF-FM (30-88 MHz) and UHF-AM/FM (225-400 MHz) secureable voice communications.

Development Status: The radio is being developed under RDT&E, N Program Element Number 24163N, Project W0661CC. Approval for service use is scheduled for September 1982.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	16	\$2,549	14	\$1,843	34	\$2,977	51	\$4,487	55	\$4,103
O&MN Install.			(5)	\$27	(23)	\$124	(23)	\$124	(50)	\$227
APN-6 Spares		\$227		\$154						
	<u>FY 1989</u>		<u>TOTAL</u>							
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>						
APN-5			170	\$15,959						
O&MN Install.	(69)	\$427		999						
APN-6 Spares				281						
GRAND TOTAL				\$17,339						

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Display Generator Unit (DGU) Mod (OSIP 54-83)

Models of Aircraft Affected: S-3A, KS-3

Description/Justification:

The display generator unit (DGU) has consistently been a top 10 readiness improvement summary evaluation (RISE) item. Additionally, 1200 separate parts comprised of 27 individual parts are the subject of a 5-year protect buy because of parts obsolescence in each DGU so that a redesign is absolutely essential for supportability. This redesign effort, in addition to replacing the obsolescent parts, will provide a 300 percent improvement in reliability and correct existing maintainability problems.

Development Status: LORAL, the current supplier of the DGU, has under development for NAVAIR, an updated version of the DGU which has been designated a universal display generator (UDG). The UDG is undergoing qualification testing with production planned in FY 1982. Approval for service use (ASU) for an S-3A application is not required.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$2,237	60	\$6,575	60	\$6,796	43	\$5,271	170	\$20,879
O&MN Install. "O" Level		-0-								-0-
O&MN Trainer Install.						\$21				21
O&MN Training						\$187				187
APN-6 Spares		-0-		\$1,116		\$1,171				2,287
GRAND TOTAL										\$23,374

Installation Data: Installation will be accomplished at organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Auxiliary Power Unit Increased Power (OSIP 24-84)

Models of Aircraft Affected: S-3A

Description/Justification:

This change consists of providing an auxiliary power unit (APU) that will be capable of producing increased compressed air (80 ppm vice 48 ppm and 46 psia vice 32 psia at 130° ambient temperature) while simultaneously providing 45 KVA vice 2 KVA electrical power.

The increased air and power input will allow the S-3A avionics systems to be operated on the ground without dependence upon ground air conditioning or electric power for avionics maintenance and checkout. The present APU does not provide adequate cooling air to prevent avionics equipment damage from overheating during prolonged ground operation.

The increased electrical power will allow all aircraft electrical systems to be operated in flight after loss of an engine-driven generator, thus providing an additional operational and safety factor.

Development Status: This unit will be a derivative of the APU now being developed for the F-18 aircraft. Qualification tests for the F-18 APU have been completed.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		FY 1987		FY 1988		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	48	\$13,322	48	\$11,449	48	\$11,856	28	\$7,226			172	\$43,853
O&MN Install.			(48)	\$1,071	(48)	\$1,028	(48)	\$1,028	(28)	\$600		3,727
O&MN Factory Training		\$100										100
O&MN Interim Support						\$643						643
APN-6 Spares		\$2,092		\$1,968		\$2,071						6,131
<b>GRAND TOTAL</b>												<b>\$54,454</b>

Installation Data: Installation will be accomplished by contractor field mod teams.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ICS Communications Control Group (OSIP 25-84)

Models of Aircraft Affected: S-3A, KS-3

Description/Justification:

The inter-communication system (ICS) communications control group presently installed in the S-3A has consistently been unreliable resulting in a high percentage of the aircraft being operationally degraded. This set of equipments will be replaced by an ICS communication control group of new design. This new set will feature state-of-the-art large scale integration and microprocessor technology in place of the hard wired logic existing in the present set and will substantially reduce the number of components required to generate and process all of the communications signals. Application of current technology will result in significantly improved reliability and maintainability characteristics. This change is necessary to accommodate future changes such as the ARC-182 radio, JTIDS and the Global Positioning System (GPS).

Development Status: An Aeronautical Equipment Reliability Maintainability Improvement (AERMIP) program for development of the new communication control group is currently being prepared at the Naval Air Development Center, Warminster, PA. Provisional approval for service use is expected in January 1984.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		FY 1987		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8	\$3,714	60	\$7,876	75	\$10,221	32	\$4,516	175	\$26,327
O&MN Install. "O" Level		-0-								-0-
O&MN Trainer Install.				\$54						54
O&MN Factory Training		\$107								107
APN-6 Spares		\$309		\$2,320		\$3,044		\$1,351		7,024
GRAND TOTAL										\$33,512

Installation Data: Installation will be at organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Flight Control System Mod (OSIP 59-83)

Models of Aircraft Affected: US-3A

Description/Justification:

In US-3A Navy Preliminary Evaluation (NPE) and Board of Inspection and Survey (BIS) trials, the Naval Air Test Center (NATC) reported several flying qualities deficiencies that limit the mission capabilities of the aircraft and adversely influence safe operation. In 1975 a systematic re-evaluation of the flight control system was undertaken to define a set of flight control system modifications that offers improvement without degradation. Through extensive analysis, simulation, and flight test, a modification package has emerged which resolves three separate problems: increased elevator authority in the landing configuration (ability to cope with more mistrim than is now possible), decreased elevator authority in high speed tactical flight (less sensitivity in high speed dashes), and adequate control authority after loss of both hydraulic systems (emergency system now installed is adequate to return for landing but questionable during landing and rollout). The flight testing has included both land and sea based trials. In all cases, pilot reaction has been highly favorable.

Development Status: Development and testing of the flight control system modification is complete.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	4	\$2,534					4	\$2,534
O&MN Install.			(1)	\$60	(3)	\$180		240
APN-6 Spares		-0-						-0-
GRAND TOTAL								\$2,774

Installation Data: Installation will be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Passive Detection System Improvements (PDS) (OSIP 49-82)

Models of Aircraft Affected: E-2C

Description/Justification:

Changes in the nature of the threat since the Passive Detection System (PDS) (ALR-59) was designed, and Fleet experience with the operator workload for the present configuration, require increasing the capability of the memory and making internal changes in one Weapon Replaceable Assembly (WRA). These changes will allow additional functions known as: (a) Special Pulse Repetition Interval (PRI) modulation detection, (b) automatic scan rate measurement, and (c) passive emitter location. Software changes will be needed in the PDS program as well as in the E-2C central computer (L-304) program.

Development Status: The improvements are under contract for incorporation in production E-2C Aircraft 69 for delivery in February 1982. Testing will be limited to contractor evaluation with the Navy monitoring the demonstration.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	0	\$7,968	9	\$8,054	12	\$11,306	12	\$11,884	12	\$12,472
O&M/ Install.			(3)	\$552	(9)	\$1,657	(12)	\$2,209	(12)	\$2,209
APN-6 Spares		\$2,045		\$3,873						
	<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>					
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>				
APN-5	6	\$6,550			60	\$58,234				
O&M/ Install.	(12)	\$2,209	(12)	\$2,209		11,045				
APN-6 Spares						5,918				
GRAND TOTAL						\$75,197				

Installation Data: Installation will be accomplished by contractor mod team.  
1-271

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: T56-A-425 Engine Water Injection (OSIP 63-83)

Models of Aircraft Affected: E-2C

Description/Justification:

E-2 aircraft using these engines require additional power for safe climb out in the event of a single engine failure on takeoff/catapult at maximum gross weight on a tropical day. The probability of such an event occurring has greatly increased with the advent of Indian Ocean operations. The addition of components to permit water injection will provide the required power during the critical period of about 90 seconds while climb is being established. A system for injection of a water-methanol mixture has been in use for many years in commercial aircraft using these engines, and in model P-3 Navy aircraft. However, the hazard associated with storage and handling of methanol aboard carriers requires that a water-only system be used for carrier-based E-2 aircraft. Due to the power surge resulting from abrupt cutoff of fluid flow when water-only is used, it is necessary to substitute a modulating cutoff valve for the on-off valve used in other aircraft installations. Otherwise the components are the same as those that are used in the proven water-methanol systems.

Development Status: Test and qualification of the modulating cutoff valve is in process by the engine contractor, Allison Division of Detroit Diesel. This phase will be completed early in 1982. Flight test by the airframe contractor and OPEVAL will follow, resulting in approval for service use (ASU) by October 1982.

OSIP 63-33

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	15	\$3,135	15	\$2,542	15	\$2,672	15	\$2,804	15	\$2,946
O&MN Install.			(15)	\$970	(15)	\$970	(15)	\$970	(15)	\$970
APN-6 Spares		\$136		\$143						

	<u>FY 1988</u>		<u>FY 1989</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	12	\$2,475			87	\$16,574
O&MN Install.	(15)	\$970	(12)	\$776		5,626
APN-6 Spares						279
GRAND TOTAL						\$22,479

NOTE: O&MN contractor installation (PPC) includes 42 spares.

Installation Data: Installation will be accomplished by a contractor mod team and during an avionics mod program at the contractor's facility.



Modification Title and No.: TRAC-A (Weapon Improvement) (OSIP 64-83)

Description/Justification:

Development Status: This change is being introduced in FY 1981 production aircraft. RDT&E,N Program Element Number 24152N refers.

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	9	\$36,058	12	\$50,352	12	\$54,224	12	\$57,953	12	\$61,044
O&MN Install.			(2)	\$375	(12)	\$2,249	(12)	\$2,249	(12)	\$2,249
APN-6 Spares		\$8,694		\$1,822		\$1,796		\$1,818		\$1,776
	<u>FY 1988</u>		<u>FY 1989</u>		<u>FY 1990</u>		<u>TOTAL</u>			
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>		
APN-5	8	\$43,625					55	\$303,336		
O&MN Install.	(12)	\$2,249	(12)	\$2,249	(3)	\$562		12,192		
APN-6 Spares								16,166		
GRAND TOTAL								331,624		

1-274

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ARC-182 Combination Radio (OSIP 27-84)

Models of Aircraft Affected: E-2B/C

Description/Justification:

The AN/ARC-182 combination radio is a new radio for all tactical aircraft. It provides VHF-FI (30-88MHz), VHF-FM (108-156MHz), VHF-AM/FM (156-174MHz) and UHF-AM/FM (225-400MHz) secureable voice communications. Navy Decision Coordinating Paper W0661-CC approved the combination radio AN/ARC-182 for tactical aircraft, including E-2 aircraft.

Development Status: The radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661CC. Approval for service use is scheduled for September 1982.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>FY 1988</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	22	\$3,344	27	\$4,054	23	\$3,624	12	\$2,937			84	\$13,959
O&MN Install.			(13)	\$152	(24)	\$280	(24)	\$280	(23)	\$269		981
APN 6 Spares		\$708		\$152								860
GRAND TOTAL												\$15,800

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: C-9B FAA Configuration Update (Commercial Service Bulletins) (OSIP 29-84)

Models of Aircraft Affected: C-9B

Description/Justification:

Federal aviation regulations require manufacturers of commercial aircraft and engines to investigate all discrepant conditions, failure, and potential safety problems reported by all certified operators. The results of these investigations with recommended corrective action are reviewed/approved by the Federal Aviation Agency (FAA) and provided to all operators as service bulletins. Each service bulletin is a complete technical directive that provides corrective change information or detailed modification instructions. To ensure a safe, reliable, FAA certified C-9B aircraft, and to provide a program that will assure continued life extension at minimum cost, the Navy must maintain configuration and integrity compatible with FAA certified commercial models by incorporation of applicable service bulletins. The incorporation of certain service bulletins also serves to preclude extensive repairs/repetitive inspections such as aft pressure bulkhead reinforcement, pylon upper spar cap replacement and horizontal stabilizer upper and lower rear spar cap. Crew equipment requirements in accordance with FAA directives will be incorporated to ensure maximum safety in case of emergency. Engine service bulletins will be used to standardize configuration and to ensure safe, reliable engines such as incorporation of 40° flap detent and computer to ensure uniformity in training and operation of all C-9B aircraft. Additional changes will be identified in FY 1984 and subsequent. Additionally, all applicable FAA Airworthiness Directives (AD) will be accomplished. C-9B aircraft will be brought into compliance with FAA advisory circular 120-37 by relocation of the OMEGA navigation control display unit where it is accessible and visible to both pilots. Urgent and high priority service bulletins will be incorporated to ensure safety, and operational readiness.

Development Status: All changes have been approved by the FAA.

OSIP 29-84

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$2,436		\$4,900		\$3,700		\$4,400		\$15,436
O&MN and O&MNR Install.				\$200		\$200		\$200		600
APN-6 Spares		\$153		\$322		\$238		\$280		<u>993</u>
GRAND TOTAL										\$17,029

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: KC-130F (SLEP) (OSIP 15-78)

Models of Aircraft Affected: KC-130F

Description/Justification:

The criteria for the KC-130F SLEP program provides a service life increase to meet an Initial Operational Capability (IOC) for a replacement aircraft, i.e., a minimum of 10,000 flight hours. Based on fatigue analysis and analytical rework, the KC-130F cannot continue in service without this SLEP. To accomplish this objective the following must be performed:

Aircraft Modifications: To include replacement of outer wings; rework of known fatigue sensitive structure in the fuselage, main landing gear wheel area, and empennage area; modification of the main landing gear area; and replacement of the center wing engine truss mounts. By effecting these changes to the airframe, the take-off gross weight of the aircraft is coincidentally increased by 20,000 pounds (13 percent) and an extension of a minimum of 10,000 hours of service life can be realized.

Reliability and Maintainability Modifications: Significant improvements in reliability and maintainability can be realized by accomplishing the modifications noted and by updating the UHF radio equipment (ARC-159). Standard Depot Level Maintenance will be accomplished as the aircraft is undergoing SLEP.

Development Status: A specification for the airframe rework was prepared by the Naval Air Rework Facility, Cherry Point, and coordinated with the fatigue analysis performed by the Naval Air Development Center.

OSIP 15-78

Project Financial Plan:

	<u>FY 1978</u>		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	3	\$21,209	5	\$10,528	5	\$6,825	6	\$6,487	7	\$12,246
APN-5 Install.	(3)	*	(5)	6,814						
Total APN-5		\$21,209		\$17,342		\$6,825		\$6,487		\$12,246
O&MN Install.									(5)	\$14,035
APN-6 Spares		\$739		\$758						

  

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	5	\$6,461	6	\$8,121			37	\$ 71,877
APN-5 Install.								6,814
Total APN-5		\$6,461		\$8,121				\$ 78,591
O&MN Install.	(8)	\$30,865	(8)	\$30,865	(8)	\$30,865		106,630
APN-6 Spares		-0-						1,497
GRAND TOTAL								\$186,818

\* Included in procurement costs.

Installation Data: Installation will be accomplished at a commercial facility.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Long Range Navigation System (OSIP 78-83)

Models of Aircraft Affected: C-130F, KC-130F

Description/Justification:

Present C/KC-130F aircraft use Loran A (APN-70), celestial (periscopic sextant) and pressure pattern (SCR-718) as long range navigation aids. Celestial navigation is weather limited and is reduced to a single line of position during daytime flight. Due to the time required to gather celestial data, it is after the fact navigation. Pressure pattern navigation provides a semi-accurate course line of position but is dependent upon celestial data for any degree of accuracy. Pressure pattern navigation is unusable between latitudes 10°N and 10°S. The remaining Loran A stations were decommissioned during 1980. Although the APN-70 is being modified to the APN-70B, this old receiver does not provide the accuracy that Loran C was designed to provide. The APN-70 and APN-70B are unusable in precipitation conditions due to noise levels. Loran C coverage in the NATO region is non-existent south of 55°N.

The SCR-718 has a 38 mean flight hour between maintenance (MFHBMA) and the APN-70B, 28 MFHBMA.

The proposed program will install an LTN-72 inertial navigation system (INS), and LTN-211 Omega and a True Airspeed System. Both the INS and Omega systems are highly reliable. The LTN-211 Omega is achieving in excess of 1,500 mean flight hours between failure (MFHBF). A modern navigation system is required if the C/KC-130F aircraft are to have a global all-weather mission capability.

Development Status: The LTN-72 INS and LTN-211 Omega have completed development. They are currently being procured on the new production EC-130Q aircraft.

OSIP 78-83

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	11	\$2,648	20	\$4,246	16	\$2,769			47	\$9,663
O&MN Install.			(11)	\$176	(20)	1460	(16)	\$272		908
O&MN Training				\$300						300
APN-6 Spares		\$7		\$12						19
GRAND TOTAL										\$10,890

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Solid State Weather Radar, AN/APN-59E (OSIP 80-83)

Models of Aircraft Affected: C-130F, KC-130F, KC-130R

Description/Justification:

The AN/APN-59E weather radar is a solid state version of the AN/APN-59B weather radar. The solid state design affords a reliability improvement of 219 hours versus 18.4 hours for the B model. The AN/APN-59E replaces the older radar directly without any aircraft wiring or mounting changes and can be accomplished in the squadron in 8 manhours. The weight and volume of the new radar are unchanged.

This radar is used as a navigation aid and for severe weather avoidance. Additionally, this radar is mission essential equipment for the Marine KC-130 aircraft aerial refueling evolutions for rendezvous control of the receiver and tanker aircraft.

The old radar is becoming increasingly difficult to logistically support. Depot maintenance for all AN/APN-59B radars installed in Navy/Marine aircraft is performed at Warner Robins AFB. The Air Force intends to phase out this support within the next 2 years. The Air Force has initiated procurement of 2,000 AN/APN-59E radar sets.

Development Status: The Navy EC-130Q new aircraft procurement includes the AN/APN-59E radar.

Project Financial Plan:

	FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	31	\$4,156	30	\$2,910	61	\$7,066
O&MN Install.		\$8				8
O&MN Training		\$100				.00
APN-6 Spares		\$809				809
GRAND TOTAL						\$7,983

Installation Data: Installation will be accomplished by organization level maintenance.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Mission Avionics (OSIP 64-81)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The Minimum Essential Emergency Communication Network (MEECN) Master Plan established the requirement to expand present capabilities of the strategic military communication network. This necessitates modification of the existing VERDIN receive and transmit terminal with the Enhanced VERDIN Processor (EVP), 1600 Baud Kits, and modifications to the very low frequency (VLF) power amplifier (PA). New VLF processors will also improve reliability and maintainability and reduce the weight and volume substantially.

Development Status: The EVP has completed prototype development and has passed all environmental, EMI, EMC and Tempest tests. Several EVP airborne software modes are still under development. The 1600 Baud Kits have completed development at Rockwell International, Newport Beach, CA and have been verified and tested by the Naval Ocean Systems Center. Both the 1600 Baud Kits and the Enhanced VERDIN Processor were Navy operationally tested 15 January to 1 February 1979. Power Amplifier equipment modification analyses are being conducted to determine the minimum modifications necessary to expand operation of the VLF PA and cooling system to 1600 baud. Provisional approval for service use (PASU) was granted in June 1980 as well as limited production approval for 57 receivers.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-6		\$5,174	2	\$6,682	4	\$8,540	2	\$3,160	6	\$10,810	4	\$7,080
O&MN Install.					(2)	\$525	(4)	\$1,050	(2)	\$525	(6)	\$1,575
APN-6 Spares				\$710		\$1,252		\$457		\$1,158		\$884

OSIP 64-31

Project Financial Plan (Cont'd):

	<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5			18	\$41,446
O&MN Install.	(4)	\$1,050		4,725
APN-6 Spares				<u>4,461</u>
GRAND TOTAL				\$50,632

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EC-130Q (SLEP) (OSIP 16-73)

Models of Aircraft Affected: EC-130G, EC-130Q

Description/Justification:

The criteria for the EC-130G/Q SLEP program provides a service life increase to meet an Initial Operational Capability (IOC) for a replacement aircraft, i.e., a minimum of 10,000 flight hours. Based on fatigue analysis and analytical rework, the EC-130G/Q cannot continue in service without this SLEP. To accomplish this objective, the following must be performed.

Aircraft Modification: To include replacement of the outer wings; rework of known fatigue sensitive structure in the fuselage, main landing gear wheel well area, and empennage area; and replacement of the center wing engine truss mounts. By effecting these changes to the airframe an extension of a minimum of 10,000 hours of service life can be realized.

Reliability and Maintainability Modifications: Significant improvements in reliability and maintainability can be realized by accomplishing the modifications noted. Standard Depot Level Maintenance will be accomplished as the aircraft is undergoing SLEP.

Development Status: A specification for the airframe rework was prepared by the Naval Air Rework Facility, Cherry Point, and coordinated with the fatigue analysis performed by the Naval Air Development Center. All development is complete.

OSIP 16-78

Project Financial Plan:

	<u>FY 1978</u>		<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	1	\$6,952	2	\$3,772	2	\$1,277	4	\$1,690	1	\$342
APN-5 Install.	(1)	*	(2)	<u>2,331</u>						
Total APN-5		\$6,952		\$5,403		\$1,277		\$1,690		\$342
O&MN Install.							(2)	\$4,464	(4)	\$11,891
APN-6 Spares		\$610		\$411		\$438				

  

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5 Proc.	2**	\$3,865					12	\$17,198
APN-5 Install.								<u>2,331</u>
Total APN-5		\$3,865						\$19,529
O&MN Install.	(1)	\$3,225	(1)**	\$3,858	(1)**	\$3,858		27,296
APN-6 Spares								<u>1,459</u>
GRAND TOTAL								\$48,284

\* Included in procurement costs.

\*\* TACAMO Trainers.

Installation Data: Installation will be accomplished by contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: HF/UHF Secure Voice (VINSON) (OLP 38-82)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

TACAMO flight deck personnel have no direct access to UHF secure voice communications. TSEC/KY-58 (VINSON) provides for secure voice transmission in UHF and VHF tactical applications. The latest CNO secure voice plan includes procurement and installation of the TSEC/KY-58. The size/weight of the TSEC/KY-58, plus adapter, is approximately 200 cubic inches// pounds.

Present TACAMO ARC-132 HF transceivers and receivers have a history of poor reliability and are no longer in production. Availability of spares and associated costs have become prohibitive since EC-130's are now the only users of ARC-132's. The ARC-191 replacement HF system will result in increased reliability, better maintainability and reduced size and cost. The ARC-191 weighs 132 pounds and occupies approximately 4 cubic feet.

Development Status: Development of the UHF secure voice is complete. The ARC-191 has been integrated into the TACAMO R&D aircraft and successfully completed EMC and Simultaneous Operation (SIMOP) tests. NAVELX ROT&E,N Program Element Number 11402N applies. Reliability qualification will be completed in June 1982. Approval for service use (JSU) is anticipated in August 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	6	\$9,257	4	\$6,283	4	\$4,714			14	\$20,254
O&MN Install.			(6)	\$481	(4)	\$214	(4)	\$214		909
O&MN Training		\$275		\$35						310
APN-6 Spares		\$647		\$1,356		\$728				2,731
GRAND TOTAL										\$24,204

Installation Data: Installation will be by contractor field team.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Survivable Time Standard (STS) (OSIP 84-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The present O-1622/ARC rubidium frequency and time standard (FTS) supporting VERDIN has a history of poor reliability, maintenance problems and insufficient battery operation time (15-30 minutes). Further, the present system cannot supply the time code output required by TACAMO, necessitating calibration from a source external to the airplane. The new FTS system will consist of two crystal time standards and one satellite receiver. The satellite receiver will be able to receive accurate time updates from the Navy's TRANSIT satellite system and also maintain accurate time for an extended period. The crystal standards will be capable of maintaining accurate time for extended periods (50-72 hours) when aircraft power is not available. This new system will greatly enhance TACAMO in its ability to accomplish its mission. Difference in weight and space will be negligible from the present FTS.

Development Status: Two prototype crystal time standards with backup battery capability have been developed and tested. One prototype satellite receiver has been developed and tested. A contract was let in January 1982 to develop preproduction time systems for environmental, bench, reliability and technical evaluation testing. Approval for service use (ASU) is expected in March 1983. RDT&E,5 Program Element Number 11402N applied.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	\$1,638	8	\$2,640	5	\$1,014	3	\$627			18	\$5,919
O&MN Install.			(2)	\$58	(7)	\$203	(6)	\$174	(3)	\$87		522
O&MN Factory Trng.		365										65
APN-6 Spares		\$176		\$604		\$308						1,088
GRAND TOTAL												\$7,594

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EMP Layer I (OSIP 77-81)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

There is a JCS requirement for nuclear hardening in TACAMO Aircraft. The specifics of the TACAMO EMP hardening program are classified. It consists of devices to improve the electromagnetic shielding of the fuselage as well as general filtering throughout the aircraft. This includes such items as feed-through capacitors and specially designed filters. Where filtering is not practical voltage limiters (spark gaps, arrestors, diode limiters, etc.) will be utilized to reduce the energy presented to the units.

Development Status: RDT&E,N Program Element Number 11402N applies. TECHEVAL and OPEVAL are complete. Provisional approval for service use (PASU) is expected in April 1982.

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$540	2	\$7,394	5	\$17,607		\$5,822		\$3,511	8	\$34,874
O&MN Install.					(1)	\$655	(3)	\$1,966	(4)	\$2,622		5,243
O&MN Factory Trng.				\$339		\$119						458
APN-6 Spares				\$1,686		\$1,427						<u>3,113</u>
GRAND TOTAL												\$43,688

Installation Data: Installation will be accomplished by the contractor.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: EMP Hardening (Layers II and III) (OSIP 32-82)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

TACAMO EMP Hardening Layers II and III consist of shielding electronic wiring. This is accomplished through individual cable shields or through compartmentalization. Additionally, the hardening consists of general filtering throughout the aircraft on paths where it does not disrupt normal signal flow. Where filtering is not practical voltage limiters will be utilized to reduce the energy presented to the units. The installation of EMP hardening kits will add an estimated 450 pounds to the aircraft weight.

Development Status: RDT&E,N Program Element Number 11402N applies. TECHEVAL and OPEVAL are complete. Provisional approval for service use (PASU) is expected in April 1982.

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$7,234	6	\$16,348		\$5,014		\$2,521	8	\$31,117
O&MN Install.			(1)	\$964	(3)	\$2,249	(4)	\$2,999		6,212
O&MN Factory Trng.		\$55		\$859						914
APN-6 Spares		\$1,250		\$1,575						2,825
GRAND TOTAL										\$41,068

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Narrowband Encryption (OSIP 111-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The TACAMO TIP II communications subsystem is configured to meet initial TIP II requirements of the 1970's. Now, encryption of one additional circuit is required (details are classified).

Development Status: A prototype installation of the crypto device and interfacing hardware has been successfully flight tested. The added equipment is identical to equipment used in the current TACAMO configuration.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	18	\$2,111							18	\$2,111
O&MN Install.			(7)	\$25	(7)	\$25	(4)	\$14		64
O&MN Trainer Install.				\$105						105
APN-6 Spares		\$225								225
GRAND TOTAL										\$2,505

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the commercial depot.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: E/F Band Jammer (OSIP 1-82)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy, NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG NDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of E/F band jammers in the ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons.

Development Status: Seven of the ten installation components required to make up one E/F band jammer have been tested and accepted by FEWSG. The remaining E/F components will be tested and accepted by FEWSG prior to March 1982. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33/34). RDT&E, N Program Element Number 24575N applies.

OSIP 1-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$4,782	4	\$5,171			4	\$ 3,953
O&MN Install.					(4)	\$229		229
APN-5 Spares		\$723		\$764				<u>1,487</u>
GRAND TOTAL								\$11,669

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF), Alameda personnel during Standard Depot Level Maintenance (SDLM) or by NARF field team. Four ERA-3B aircraft will also be modified to accept this jammer under OSIP 118-80.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: G/H Band Jammer (OSIP 2-82)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy MKC-135A aircraft to simulate various threats during TECHEVAL, CPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG NDCP (0896-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of G/H band jammers in the ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of the five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons.

Development Status: Seven of the ten installation components required to make up one G/H band jammer have been tested and accepted by FEWSG. The remaining G/H components will be tested and accepted by FEWSG prior to March 1982. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33 and VAQ-34). RD72E,N Program Element Number 04575N applies.

OSIP 2-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$4,838	4	\$4,844			4	\$ 9,682
O&MA Instali.					(4)	\$141		141
APN-6 Spares		\$754		\$598				<u>1,462</u>
GRAND TOTAL								\$11,285

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF), Alameda personnel during Standard Depot Level Maintenance (SDLM) or by NARF field team. Four ERA-35 aircraft will also be modified to accept this jammer under OSIP 118-80.

1

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: E/F and G/H Band Jammer (OSIP 40-82)

Models of Aircraft Affected: NKC-135A FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/VAQ-34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG NDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of dual E/F and G/H band jammers in the two NKC-135A aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems.

Development Status: Fourteen of the twenty installation components required to make up one E/F and one G/H band jammer have been tested and accepted by FEWSG. The remaining components will be tested and accepted by FEWSG prior to March 1982. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33/34). EDT&E, N Program Element Number 24575N applies.

OSIP 40-82

Project Financial Plan:

	<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1	\$4,982	1	\$3,919					2	\$ 8,901
O&MN Install.					(1)	\$300	(1)	\$300		600
APN-6 Spares		\$1,056		\$320						<u>1,376</u>
GRAND TOTAL										\$10,877

Installation Data: Upon completion and test of the E/F and G/H band exciters, high power amplifiers and antenna systems, this jammer project will be transferred to the Naval Avionics Center who will, thereafter provide full manufacturing and logistic support. Production installation will be accomplished by McDonnell Douglas-Tulsa, with installation schedule determined by available aircraft downtime as scheduled by COMFEWSG.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: A/B Band Jammer (OSIP 60-81)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLI). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG NDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control codes. This program provides for the procurement, installation and initial support of A/B band jammers in the ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of the five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons.

Development Status: Engineering development models (EDM) of the A/B band jammer components have been tested and accepted by FEWSG. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33 and VAQ-34). RDT&E,N Program Element Number 24575N applies.

OSIP 66-81

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5		\$5,050		\$1,494	"	\$5,710			4	\$12,254
O&MN Install.							(4)	\$281		281
APN-6 Spares		\$826		\$241		\$781				<u>1,848</u>
GRAND TOTAL										\$14,383

Installation Data: Production installations will be accomplished by Naval Air Rework Facility (NARF) field teams or concurrent with Standard Depot Level Maintenance (SDLM). Four ERA-3B aircraft will also be modified to accept this jammer under OSIP 118-80.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: C/D Band Jammer (OSIP 68-31)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORAFGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG WDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of C/D band jammers in the ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons.

Development Status: Engineering Development Models (EDM) of the C/D band jammer components have been constructed and were tested and accepted by FEWSG in October 1981. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33 and VAQ-34). KDT&E,N Program Element Number 24575N applies.

Project Financial Plan:

	FY 1981		FY 1982		FY 1983		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		\$2,685		\$1,704	4	\$4,737			4	\$ 9,126
O&MN Install.							(4)	\$140		140
APN-6 Spares		\$538		\$411		\$462				1,471
GRAND TOTAL										\$10,677

1

OSIP 68-81

Installation Data: The C/D jammer is currently under development by NSWC with the Naval Avionics Center (NAC) providing product design, test and other engineering support. The jammer project will be transferred to NAC upon completion of development and acceptance by FEWSG. NAC, thereafter, will provide full manufacturing and logistic support. Production installations will be accomplished by Naval Air Rework Facility (NARF) field teams or concurrent with Standard Depot Level Maintenance (SDLM). Four ERA-3B aircraft will also be modified to accept this jammer under OSIP 118-80.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: I/J Band Jammer (OSIP 93-82)

Models of Aircraft Affected: NKC-135A FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG KDCF (0898-AA) a series of five new jammers (A/B, C/D, E/F, G/H, and I/J) is being designed for application in the FEWSG ERA-3B and NKC-135A aircraft to provide a full range of high power standoff jamming techniques required in Fleet exercises and test program support.

This project provides for the procurement, installation and initial support of I/J band jammers in the two Navy NKC-135A aircraft (two jammers per aircraft).

Development Status: Seven of the ten installation components required to make up one I/J band jammer have been tested and accepted by FEWSG. The remaining I/J components will be tested and accepted by FEWSG prior to October 1982. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG. RDT&E, N Program Element Number 24575N applies.

OSIP 93-83

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	2	\$5,372			2	\$5,372
O&MN Install.			(2)	\$400		400
APN-5 Spares		\$786				<u>786</u>
GRAND TOTAL						\$6,558

Installation Data: Production installations will be accomplished at McDonnell Douglas-Tulsa with schedule determined by available aircraft downtime as scheduled by COMFEWSG.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: I/J Band Jammer (OSIP 94-83)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The Fleet Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (CHANCE) Force. It employs tactics, procedures, equipment, vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida.

In accordance with the FEWSG NDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of I/J band jammers in the ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons.

Development Status: Seven of the ten installation components required to make up one I/J band jammer have been tested and accepted by FEWSG. The remaining I/J components will be fully tested and accepted by FEWSG prior to October 1982. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33 and VAQ-34). RDT&E, N Program Element Number 24575N applies.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		\$4,246	4	\$10,180			4	\$14,426
O&MN Install.					(4)	\$282		282
APN-6 Spares		\$720		\$1,537				2,257
GRAND TOTAL						1-304		\$16,965

OSIP 94-83

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF), Alameda personnel during Standard Depot Level Maintenance (SDLM) or by NARF field team. Four ERA-3B aircraft will also be modified to accept this jammer under OSIP 118-80.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: ERA-3B ESM Receiver (OSJP 95-83)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The SCI-2100 solid-state digital radio frequency receiver is a replacement for the AN/ALR-43 ESM Receiver that became obsolete in the 1960's and is no longer supportable. The SCI-2100 has the accuracy and the signal processing capability to allow it to be interfaced with the new Fleet Electronic Warfare Support Group (FEWSG) Airborne Jammer System (FAJS), while the AN/ALR-43 ESM Receiver cannot be so interfaced. The SCI-2100 will facilitate long range detection, direction finding, signal identification and accurate frequency set-on of the FAJS in support of the FEWSG mission. The SCI-2100 will enable strict adherence to frequency allocation plans for Fleet training exercises and electronic warfare (EW) demonstrations. This will preclude unintentional jamming or intrusion of civilian/military frequencies.

Development Status: The SCI-2100 manufactured by SCI and procured through the General Services Administration (GSA) is currently being installed in FEWSG AN/ULQ-13 vans. Approval for service use (ASU) is not required as the ERA-3B is a Fleet support aircraft and does not operate aboard aircraft carriers. Flight tests are scheduled to verify system integration and ESM receiver function.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1,86</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	1*	\$1,134	2	\$2,373	1	\$510			4	\$4,017
O&MN Install.			(1)*	\$34	(2)	\$68	(1)	\$34		136
O&MN Factory Trng.				\$91						91
APN-6 Spares				\$206		\$305				511
GRAND TOTAL										\$4,755

\*Prototype.

Installation Data: Naval Air Rework Facility (NARF) Alameda will install the change kits concurrent with normal Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Sea Water Activated Release System (SEAWARS) (OSIP 96-83)

Models of Aircraft Affected: A-4, A-6, A-7, AV-8, F-4, RF-8, F-14, F-18, S-3, T-2

Description/Justification:

SEAWARS is a sensing and activation device that attaches to the current manual parachute fitting and provides automatic release upon immersion in sea water. SEAWARS will preclude parachute entanglement and water dragging which are major factors in several aircrew drownings per year.

Development Status: The design is in engineering development. Provisional approval for service use is expected in August 1982. Approval for service use is expected in December 1982.

Project Financial Plan:

	<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	4,000	\$7,815	2,770	\$6,051	2,230	\$5,249	9,000*	\$19,115
O&MN Install. "O" & "I" Level		-0-						-0-
APN-6 Spares		\$842		\$745		\$510		2,097
GRAND TOTAL								\$21,212

\*Quantity represents parachute activation devices.

Installation Data: Installation will be accomplished at organizational and intermediate levels.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AERO-7A/7B Rack Improvement (OSIP 97-83)

Models of Aircraft Affected: A-6E, KA-6D, A-4M

Description/Justification:

This program will greatly improve the reliability and maintainability of the AERO-7A and B racks reducing maintenance manhours and incidences of "hung" ordnance while increasing safety during loading and carrier operations. Changes to be incorporated are: (1) replace hanger bolts on AERO-7B, (2) redesign housing to accept new bushing and sway brace bolts, (3) replace safety switch, (4) incorporate a new material hook, (5) new cap assemblies, and (6) provide a quick disconnect for the firing c/p. These changes should reduce maintenance costs over \$100,000 per year based upon the elimination of hook changes alone.

Development Status: All development has been completed.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1,631	\$2,985	1,084	\$1,902			2,715*	\$4,887
O&MN Install.				\$226	\$150			376
APN-6 Spares		\$565		\$375				940
GRAND TOTAL								\$6,203

\* Quantity represents racks.

Installation Data: Installation of the AERO-7A kit will be done at the Naval Air Rework Facilities, Norfolk and Alameda. Installation of the AERO-7B kit will be done during overhaul.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR : '83

Appropriation: APN - Activity 5

Modification Title and No.: ASW Pods for Carrier Tactical Aircraft (OSIP 32-84)

Models of Aircraft Affected: A-6E, A-7C/E

Description/Justification:

The airborne anti-submarine warfare (ASW) pod is being developed to provide the carrier Commander with the means to augment the ASW aircraft assets with tactical aircraft (A-6's and A-7's). This pod will deploy a maximum of eight sonobuoys and relay the acoustic data received from the sonobuoys back to the carrier or a LAMPS configured escort. It attaches to wing stations 1 and 8 of the A-7 aircraft via bomb rack BRU-10A/A, and wing stations 1 and 5 of the A-6 aircraft via bomb rack AERO-7 series. The pod is 53.34 cm in diameter and 419.1 cm in length and weighs 190.5 kg when empty and 308.4 kg when loaded with sonobuoys. Power for the pod is obtained from the wing station umbilical cord. Equipments installed within the pod include the AN/ARR-75 receiver and the T1220B/ART(v) transmitter. No modification to the aircraft airframe or power systems is required to accommodate this pod.

Development Status: Navy Technical Evaluation (NTE) commenced October 1978 and was completed in December 1979. Operational Evaluation (OPEVAL) was completed in March 1981 with the OPEVAL report was received in October 1981.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	11	\$2,647	14	\$3,551	28	\$5,686	35	\$6,755	88	\$18,839
O&MN Training		\$58		\$236		\$61		\$67		422
APN-6 Spares		\$233		\$115		\$197				545
GRAND TOTAL										\$19,806

\*Quantity represents pods.

Installation Data: No aircraft installation is required.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-126B (OSIP 110-79)

Models of Aircraft Affected: A-4, A-6, A-7, F-4, F-18, F-14, EA-6B

Description/Justification:

The AN/ALQ-126B is designed to improve reliability and ultimate performance from its predecessor, the ALQ-126A. The ALQ-126B system consists of equipment design changes to improve maintainability and reliability while significantly improving effectiveness. These design changes will have a negligible effect on equipment size and weight. Production will reflect the procurement of ALQ-126B units to permit a one for one replacement of the AN/ALQ-126A.

Development Status: Five (5) production prototypes were manufactured by Sanders Associates for extensive testing. TEMP No. 421 was approved to support all required Navy test and evaluation procedures. Technical testing is complete and the operational testing is nearing completion. Approval for Service Use (ASU) is expected in the third quarter of FY 1982 with IOC programmed for early FY 1983.

Project Financial Plan:

	<u>FY 1979</u>		<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	5*	\$13,240		\$8,790		\$8,095	161*	\$86,305	309*	\$143,953
APN-6 Spares				\$137		\$66		\$8,555		\$13,953

\* GFE only.

OSIP 110-79

Project Financial Plan (Cont'd.):

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	259*	\$128,175	409*	\$206,069		\$2,735	1,143*	\$597,266
APN-6 Spares		\$12,314		\$21,903		\$13,292		<u>70,220</u>
GRAND TOTAL								\$667,486

\*GFE only.

Installation Data: The ALQ-126B is a direct replacement for the ALQ-126A.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-45F (OSIP 109-79)

Models of Aircraft Affected: A-4M, OA-4M, F-4S, RF-4B, A-7E, KA-6D, AV-8C

Description/Justification:

The CP-1293/ALR-67 computer and IP-1276/ALR-67 azimuth display countermeasures unit of the AN/ALR-67 system have been designed such that they are interchangeable with the electrical pulse analyzer and azimuth display of the AN/ALR-45 receiving set. This retrofit will provide a software reprogrammable analyzer, an alpha-numeric display of threat bearing and I.D., and interface capability with AN/ALC-126 and AN/ALE-39.

Weight and space is 22.5 pounds, 536 cubic inches, which is the same as the ALR-45 pulse analyzer less adapter cables needed to tie the CP-1293/ALR-67 into existing aircraft wiring. IP-957/APR-36 azimuth display indicator will be directly replaced by the IP-1276/ALR-67 azimuth display indicator.

Development Status: Navy preliminary evaluation was completed at the Naval Weapons Center (NWC) in December 1978. A joint TECHEVAL and OPEVAL with the APR-43 has been completed. Approval for service use is anticipated in March 1982. Limited procurement was initiated based on authorization in accordance with Secretary of Defense letter of 8 Dec 1980. RDT&E (N) Program Element Number is 64225N (WO 618-TW).

Project Financial Plan:

	<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>FY 1985</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	43	\$19,006	82	\$10,195	69	\$9,947	104	\$14,421	139	\$19,463
O&MN Install. "O" Level						-0-				
APN-6 Stores				\$2,827		\$1,136				

OSIP 109-79

Project Financial Plan (Cont'd):

	<u>FY 1986</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	303	\$58,872 740*		\$131,904
O&MN Install. "O" Level				-0-
APN-6 Spares				<u>3,963</u>
GRAND TOTAL				\$135,867

\*Quantity represents GFE.

Installation Data: The ALR-67 GFE is a direct replacement for ALR-45 analyzer and display to be installed at the organizational level.



MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Digital Air Data Converter (OSIP 34-84)

Models of Aircraft Affected: E-2C, EA-6A, EA-6B, KA-6D, A6E, C-2A, NEA-6B

Description/Justification:

Current air data computers are impacting readiness of Navy aircraft due to low reliability, obsolescence and nonstandardization. To resolve this problem a standard digital air data converter (DADC) is being developed (NDCP W0572) to replace the following air data computers: CP-1106, CP-1051, CP-1005, CP-828, CP-953, and CP-1085. The DADC is designed to be form, fit and function interchangeable with no airframe change required. In addition to being interoperable between aircraft, the mean flight hour between failure (MFHBF) will be increased from the current 106 hours to 400 hours. The standard DADC will use existing ground support equipment.

Development Status: Development is being funded under the Avionics Components and Subsystems Program (AVCS) Program Element Number 64203N, W0572. Approval for service use is planned for September 1983.

Project Financial Plan:

	<u>FY 1984</u>		<u>FY 1985</u>		<u>FY 1986</u>		<u>FY 1987</u>		<u>TOTAL</u>	
	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>	<u>Qty</u>	<u>Cost</u>
APN-5	48	\$2,012	100	\$3,804	271	\$11,272	119	\$5,818	538	\$22,906
C&MN Install. "O" Level		-0-								-0-
APN-6 Spares		\$300		\$848		\$1,963		\$920		\$4,031
GRAND TOTAL										\$26,937

Installation Data: Installation will be accomplished at the organizational level.

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APM - Activity 5

Modification Title and No.: Power Plant Changes

Models of Aircraft Affected: Various

Description/Justification:

The Component Improvement Program (RDT&E, II) engineers power plant changes which must then be incorporated into the appropriate engine population. Implementation of these changes requires procurement of kits and technical information. The request for funds to implement the changes is based on the phased incorporation schedule and change cost per engine.

Development Status: All engineering effort will be accomplished prior to procurement of kits.

Project Financial Plan:

	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>
Total APN-5	\$12,242	\$10,200	\$11,700	\$14,800	\$16,600
O&MN Install.	\$4,896	\$5,244	\$5,770	\$5,770	\$5,770
Manhours	133,600	133,600	133,600	133,600	133,600
APN-6 Spares	\$2,000	\$1,325	\$1,475	\$1,950	\$2,150

  

	<u>FY 1986</u>	<u>FY 1987</u>
Total APN-5	\$18,900	\$21,300
O&MN Install.	\$5,700	\$5,700
Manhours	133,600	133,600
APN-6 Spares	\$2,475	\$2,700

MODIFICATION OF AIRCRAFT  
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: Emergent Safety Requirements

Models of Aircraft Affected: Various

Description/Justification:

This item covers the procurement of kits to correct flight safety deficiencies. These deficiencies are unpredictable since they are revealed during actual operation of aircraft in the Fleet under diverse tactical and environmental conditions. These changes must have OPNAV authorization and will be reviewed by the NAVAIR Change Control Board.

Development Status: Not applicable.

Project Financial Plan:

	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>	<u>FY 1984</u>
APN-5	\$5,730	\$1,200	\$5,400	\$6,300
O&MNR Install.	\$481	\$515	\$557	\$557
O&MN Install.	\$3,475	\$3,720	\$4,024	\$4,024
Manhours	102,888	100,000	100,000	100,000
APN-6 Spares	\$220	\$120	\$525	\$625
	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	
APN-5	\$7,500	\$8,700	\$10,100	
O&MNR Install.	\$557	\$557	\$557	
O&MN Install.	\$4,024	\$4,024	\$4,024	
Manhours	100,000	100,000	100,000	
APN-6 Spares	\$700	\$800	\$925	

Installation Data: These kits will be installed during SDLM, at organizational or intermediate levels, by contractors, or by field mod teams.

FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1987

CONGRESSIONAL FY-1983

(Dollars in Millions)

WEAPON	P-1		FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987		TOTAL	
System Type	Line	Item	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	COST	
AV/BA/B	AST	6	0	0	1	1.200	0	0	0	1	1.200	
	OFT	6	0	0	0	0	1	28.416	0	1	28.416	
	WTT	6	0	0	0	0	1	22.940	0	1	22.940	
	Mods	6	0	0	0	1.878	3.318	3.623	3.860		12.679	
	Mods	75	.170	.211	.812	.200	.344	.298	.321		2.356	
	Spare	74	.212	.251	5.162	1.009	.560	.765	.245		8.204	
	Total		.392	.462	7.174	31.503	27.162	4.686	4.476		75.795	
A-3	Mods	75	.595	.414	.195	.121	.094	.150	.079		1.648	
	Spare	74	0	0	.058	.014	.015	.015	0		.102	
	Total		.595	.414	.253	.135	.109	.165	.079		1.750	
F-4	Mods	75	2.563	.442	.721	.604	.604	.596	.709		6.249	
	Spare	74	.128	.140	.369	.341	.295	.180	.210		1.663	
	Total		2.691	.582	1.100	.945	.899	.776	.919		7.912	
ECX	OFT		0	0	0	0	15.000	0	0		15.000	
	Mods		0	0	0	0	0	2.000	2.000		4.000	
	Spare	74	0	0	0	0	0	2.000	0		2.000	
	Total		0	0	0	0	15.000	4.000	2.000		21.000	
ACMS	ACMS-2	75	0	0	0	0	0	1	23.259	0	1	23.259
	Mods	75	2.857	.812	3.526	1.652	1.927	2.259	4.036		17.079	
	Spare	74	.400	.240	.650	.800	.300	.650	.558		3.598	
	Total		3.257	1.052	4.176	2.462	2.227	26.168	4.594		43.936	

FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1982

CONGRESSIONAL FY-1983

(Dollars in Millions)

WEAPON	P-1		FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987	TOTAL
System	Type	Line Item	Qty	Qty	Qty	Qty	Qty	Qty	Qty	COST
A-4H	Mods	75	4.600	0	0	.060	.042	.046	.050	4.798
	Spares	74	0	.060	.220	.125	.035	.047	.060	.547
	Total		4.600	.060	.220	.185	.077	.093	.110	5.345
TA-4	Mods	75	0	.105	.115	.183	.205	.236	.255	1.099
	Spares	74	.149	.130	.160	.110	.120	.145	.120	.934
	Total		.149	.235	.275	.293	.325	.381	.375	2.033
A-6E	PTT	1	0	0	0	0	1 8.365	0	0	1 8.365
	Mods	1	1.189	1.339	.494	1.459	2.108	1.770	2.900	11.289
	Spares	74	.315	.876	.715	1.540	.865	.340	.310	4.964
	Total		1.505	2.215	1.209	2.999	11.338	2.110	3.210	24.616
EA-GA/B	LCCFT	3	0	0	1 1.500	0	0	0	0	1 1.500
	Mods	3	2.000	8.096	5.400	10.061	4.250	3.075	1.419	34.301
	PTT	75	0	0	1 1.043	0	3 1.438	0	0	4 4.541
	LCCFT	75	0	0	0	0	2 2.775	0	0	2 2.775
	Mods	75	0	0	0	.38	.640	1.649	1.289	4.136
	Spares	74	.300	.185	1.185	.325	.700	.360	.185	3.210
	Total		2.300	8.281	9.128	10.944	11.863	5.084	2.893	50.493
A-7E	WST (V)	75	0	0	1 5.210	0	0	0	0	1 5.210
	LSO (DT)	75	0	0	1 1.050	1 .999	0	0	0	2 2.049
	Mods	75	4.746	1.300	1 820	.745	2.117	2.543	4.035	17.310
	Spares	74	0	.160	3.305	1.705	.135	.145	.160	6.110
	Total		4.746	1.460	11.885	3.453	2.252	2.688	4.195	30.679

FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1982

CONGRESSIONAL FY-1983

(Dollars in Millions)

WEAPON	P-1		FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987	TOTAL
System	Type	Line Item	Qty	Qty	Qty	Qty	Qty	Qty	Qty	COST
C-130	Mods	31	.050	.500	0	0	0	0	0	.550
	Mods	75	.200	.383	0	.185	.327	.678	.488	2.261
	Spares	74	.153	.125	.072	.120	.110	.110	.040	.730
	Total		.403	1.008	.072	.305	.437	.788	.528	3.541
T-44A	Mods		0	0	0	0	0	.466	1.500	3.966
	Mods	75	.050	.422	0	.224	.466	0	0	1.162
	Spares	74	0	.225	.100	.075	.075	.075	.075	.625
	Total		.050	.647	.100	.299	.541	.541	3.575	5.753
F-14	Mods	8	.600	16.020	26.264	17.397	16.690	17.000	8.323	102.894
	Spares	74	0	.665	3.711	1.132	1.265	.920	.600	8.323
	Total		.600	17.285	30.005	18.529	17.955	17.920	8.923	111.217
F-18	OFT	10	1 9.756	2 23.841	1 13.129	1 13.626	1 14.523	0	0	6 75.075
	WTT	10	2 54.930	2 61.204	1 33.616	1 35.401	1 37.186	1 39.060	1 40.994	9 302.311
	PTT	10	0	1 5.709	0	0	0	0	0	1 5.709
	Mods	10	6.165	4.332	32.882	19.500	18.000	17.000	16.000	113.873
	Spares	74	1.000	1.649	4.420	4.770	4.115	2.530	2.120	20.604
	Total		71.821	96.735	84.047	73.497	73.824	58.590	59.064	517.578
H-1	WST	14	0	0	0	1 10.468	0	0	0	1 10.468
	Mods	14	0	0	0	0	.777	0	0	.777
	LCCPT	75	0	0	1 .300	0	0	0	0	1 .300
	WST	75	0	0	1 9.339	0	0	0	0	1 9.339
	CPT	75	0	0	0	0	1 1.168	0	0	1 1.168
	Mods	75	.087	.438	0	.400	1.508	.894	.967	4.294
	Spares	74	.028	.025	.140	4.163	1.161	1.040	.685	7.246
	Total		.115	.463	9.779	15.031	4.611	1.944	1.652	33.592

FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1982

CONGRESSIONAL FY-1983

(Dollars in Millions)

WEAPON	P-1		FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987	TOTAL
System Type	Line Item	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	COST
E-2B/C	Mods	20	13.003	6.452	4.544	15.385	8.044	2.072	2.342	51.842
	Mods	75	0	.122	.035	.153	.178	.152	.224	.864
	Spares	74	.418	.365	.764	2.730	.630	.580	.830	6.317
	Total		13.421	6.939	5.343	18.268	8.852	2.804	3.396	59.023
T-2	Mods	75	.073	.225	0	.200	.370	.587	.704	2.159
	Spares	74	.100	.060	.052	.073	.080	.100	.125	.590
	Total		.173	.285	.052	.273	.450	.687	.829	2.749
P-3	P1T	18	0	2 9.354	0	0	0	0	0	2 9.354
	WST	18	0	1 21.459	1 20.880	0	0	0	0	2 42.339
	Mods	18	6.370	23.190	24.810	48.812	41.599	40.630	39.320	224.740
	Mods	75	0	0	0	0	0	0	3.848	3.848
	Spares	74	.232	.740	2.050	3.250	3.000	1.350	1.450	12.072
	Total		6.602	54.743	47.748	52.063	44.599	41.980	44.618	292.353
S-3A	WSS	75	0	0	0	0	0	8 4.078	8 4.449	16 8.527
	Mods	75	10.698	.145	3.506	1.829	4.656	7.619	1.782	30.435
	Spares	74	.376	.215	1.006	.458	4.508	.623	7.00	7.946
	Total		11.074	.360	4.512	2.287	9.164	12.320	6.991	46.908
T-34	FIT	28	0	3 7.198	3 7.348	2 4.408	0	0	0	8 18.954
	CPY	28	0	1 .900	0	0	0	0	0	1 .900
	Mods	28	0	.100	.295	.964	5.281	5.616	3.579	16.234
	Mods	75	.463	0	0	0	0	0	0	.463
	Spares	74	.014	.025	.150	.115	.115	.115	.090	.624
	Total		.477	8.223	7.753	5.487	5.396	5.731	4.068	37.175

FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1982

CONGRESSIONAL FY-1983

(Dollars in Millions)

WEAPON	P-1		FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987	TOTAL
System	Line		Qty	Qty	Qty	Qty	Qty	Qty	Qty	COST
Type	Item									
H-2	WST	22	0	0	0	0	1 20.000	1 21.000	0	2 41.000
	SOPTT	22	0	0	0	0	0	2 24.000	0	2 24.000
	Mods	22	0	.600	.500	1.800	2.000	2.000	1.000	7.900
	Mods	75	.464	0	0	0	0	0	0	.464
	Spares	75	.104	.030	.041	.045	.050	.210	.160	.640
	Total		.568	.630	.541	1.845	22.050	47.210	1.160	74.004
H-3	DASS	75	0	0	0	0	0	7 3.789	0	7 3.789
	SOFTT	75	0	0	0	0	1 9.850	1 10.501	0	2 20.351
	Mods	75	5.740	3.700	2.395	.601	5.695	2.004	0	20.135
	Spares	74	.139	.265	.621	1.907	1.090	.600	.350	4.972
	Total		5.879	3.965	3.016	2.508	16.635	16.894	.350	49.247
H-46	OFT V	75	0	0	0	0	0	0	1 25.591	1 25.591
	Mods	75	.716	.517	.302	1.775	4.036	3.277	1.289	11.912
	Spares	74	.244	.200	.155	.180	.210	.240	.075	1.304
	Total		.960	.717	.457	1.955	4.246	3.517	26.955	38.807
H-53	OFT V	12	0	1 10.000	0	0	0	0	0	1 10.000
	CPT	12	1 .560	0	0	0	0	0	0	1 .560
	Mods	12	.482	.322	1.750	1.015	1.304	1.500	1.500	7.873
	OFT V	75	0	0	0	0	0	0	1 23.990	1 23.990
	Mods	75	.200	.122	.275	0	.066	1.248	.879	2.890
	Spares	74	.097	.660	1.363	.915	.650	.690	.369	4.741
	Total		1.339	11.204	3.385	1.930	2.020	3.438	26.746	50.062



FLIGHT SIMULATOR PROGRAM EXHIBIT P-43

January 1982

CONGRESSIONAL FY-1983

(Dollars in Millions)

		D-1															
WEAPON	Line	FY-1981	FY-1982	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987	TOTAL								
System Type	Item	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Cost					
SH-60B	WTT	16	0	1	15.980	2	33.124	0	0	0	3	49.104					
	CPT	16	0	1	.980	1	.974	0	0	0	2	1.954					
	SOPTT	16	0	1	6.760	1	7.209	0	0	0	2	13.969					
	OFT	16	0	1	8.380		0	0	0	0	1	8.380					
	DPT	16	0		0		0	4	6.650	0	4	6.650					
	Mods	16	0		.980	4.737	4.889	7.626	7.233	7.715		33.180					
	Spares	74	0		1.607	3.500	4.000	3.500	3.700	1.000		16.907					
	Total				34.667	49.544	15.539	11.126	10.533	8.715		130.144					
VTXTS	CPT		0		0		0	0	2	2.285	4	9.326	6	11.611			
	ACT		0		0		0	0	5	73.102	1	18.642	6	91.744			
	OFT		0		0		0	0	10	64.427	6	55.849	16	120.276			
	Spares	74	0		0		0	0		14.000		10.000		24.000			
	Total		0		0		0	0		153.814		93.817		247.631			
TH-57	OFT	30	0	3	9.500	2	7.000	0	0	0	5	16.500					
	CPT	30	0	1	.600	2	1.400	0	0	0	3	2.000					
	Mods	30	0		.583		1.130	0	0	0		1.513					
	Spares	74	0		0		6.900	2.000	.200	.200		8.400					
	Total		0		0	10.483	15.530	2.000	.200	.200		28.413					
C-2A	Mods	26	0		0		.856	.106	.064	.139		1.165					
	Total		0		0		.856	.106	.064	.139		1.165					
GRAND TOTAL			133.907		252.682		292.297		279.121		295.271		425.116		314.527		1,992.921

#### CH-53E Multi-Year Procurement

This is a procurement of the CH-53E heavy lift helicopter for Marine Corps amphibious assault and Navy vertical on-board delivery/airborne mine countermeasures missions. It is planned to procure 61 aircraft with long lead funding beginning in FY 1983.

#### CRITERIA

1. Benefit to the Government:

Cost savings of approximately \$62.6 million will result from MYP for FY 1984 through FY 1988 (Production Lots VII-XI) of 61 CH-53E aircraft.

2. Stability of Requirement:

The CH-53E is in the FY 1983 budget at a total quantity of 160. The quantity planned for FY 1984-88 should not decrease. The CH-53E procurement requirement for the period planned for multiyear procurement is expected to remain stable. The total requirement exceeds the amount provided for by the multiyear procurement and additional years of procurement are planned.

3. Stability of Funding:

The FY 1983 budget contains sufficient funds.

4. Stable Configuration:

The CH-53E is now technically mature with all RDT&E testing completed. All other testing will be completed by June 1982. Resulting configuration changes will have been identified prior to MYP contract award. An expected configuration change for airborne mine countermeasures will not significantly change the multiyear contract.

5. Degree of Cost Confidence:

The cost estimates shown herein were prepared using Sikorsky inputs considering past history on the CH-53E program and other programs within Sikorsky. The cost estimates for contract and savings are considered realistic; however, assurance concerning contract costs depend on the contractor's ability to manage costs. Sikorsky's past cost performance has been unsatisfactory; however, recent management initiatives indicate that the contractor appears to be making progress toward controlling costs. The availability of actual cost data from construction of previous production aircraft provides a better basis for the cost estimate and a moderate degree of confidence is warranted. The multiyear contract will be fixed price type and will contain an economic price adjustment clause and a provision for re-evaluation of overhead rates based on government business base fluctuations (both up and down).

6. Degree of Confidence in Contractor Capability:

Sikorsky can perform adequately under a MYP. Past CH-53E schedule delays have been resolved and the contractor has recently accelerated his production rate and has the capacity to produce two per month.

ACQUISITION STRATEGY COMPARATIVE SUMMARY  
CH-53E  
(\$ in Millions)

	<u>ANNUAL CONTRS.</u>	<u>MYP ALTERNATE</u>
Qty	61	61
Total Contract Price	1,217.1	1,154.5
Cancellation Ceiling	-	-
\$ Cost Avoidance Over Annual	-	62.6
% Cost Avoidance Over Annual	-	5.1%

RISK RELATED FACTORS

RISK

- Requirement Stability	Low
- Funding Stability	Moderate
- Configuration Stability	Low
- Cost Confidence	Moderate
- Adequate Lead Time	Low

An explanation of the risk assessment for each factor is included in the exhibit which addresses the "Criteria of Selection".

## CH-53E (MXP) TOTAL PROGRAM

(\$ in millions)

	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>FY 1988</u>	<u>TOTAL</u>				
Quantity		11	11	14	14	11	61				
<u>Annual Proposal</u>											
Gross		256.3	269.8	400.2	443.5	389.6	1,759.4				
Less A.P.		- 2.9	- 3.2	- 4.9	- 5.4	- 6.0	-22.4				
Net		253.4	266.6	395.3	438.1	383.6	1,737.0				
Adv. Proc.	2.0	3.2	4.9	5.4	6.0	-	22.4				
TOTAL ANNUAL COST	2.9	256.6	271.5	400.7	444.1	383.5	1,759.4				
<u>Multiyear Proposal</u>											
Gross		247.9	259.5	387.0	430.6	371.8	1,696.8				
Less A.P.		- 8.4	-52.2	-87.5	-108.2	-24.8	-341.1				
Net		239.5	207.3	299.5	322.4	287.0	1,355.7				
Adv. Proc.											
For 1984	8.4						8.4				
For 1985	5.5	45.7					52.2				
For 1986	7.1	33.1	47.3				87.5				
For 1987	7.1	14.0	40.1	47.0			108.2				
For 1988	5.4	10.9	31.5	36.6	.4		84.8				
TOTAL	33.5	104.7	118.9	83.6	.4		341.1				
TOTAL MULTIYEAR COST	33.5	344.2	326.2	383.1	322.8	287.0	1,696.8				
SAVINGS	+ 30.6	+ 87.6	+ 54.7	- 17.6	-121.3	- 96.6	- 62.6				
<u>Outlays</u>	<u>FY 1983</u>	<u>FY 1984</u>	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>FY 1988</u>	<u>FY 1989</u>	<u>FY 1990</u>	<u>FY 1991</u>	<u>FY 1992</u>	<u>TOTAL</u>
Annual	1.9	86.5	226.7	301.9	382.8	399.4	265.0	67.3	20.0	6.9	1,759.4
Multiyear	11.2	96.1	229.1	349.0	352.7	338.6	238.6	54.6	20.0	6.9	1,696.8
Difference	+9.3	+9.6	+ 2.4	+47.1	-31.1	-60.8	-26.4	-12.7			-62.6

CH-53E  
IMPACT OF INFLATION ON FUNDING AND SAVINGS

	(\$ In Millions)		
	<u>Total Multiyear Contract</u>	<u>Total Program Cost</u>	<u>Total Savings</u>
+2%	1,242.8	1,832.8	81.3
+1%	1,197.9	1,763.7	71.7
Budget	1,154.5	1,696.8	62.6
-1%	1,112.5	1,632.2	54.0
-2%	1,071.9	1,569.8	45.7

CH-53E

(\$ In Millions)

SAVINGS AND COST AVOIDANCE

	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>TOT</u>
<u>Qty</u>		11	11	14	14	11	61
Annual Contract	2.6	172.5	198.0	273.7	301.9	268.4	1,217
Multiyear Contract	33.2	260.1	252.7	256.1	180.6	171.8	1,154
Difference	+30.6	+87.6	+54.7	-17.6	-121.3	-96.6	-62

Source of Savings

(\$ In Millions)

Escalation	44.9
Vendor Procurement	<u>17.7</u>
TOTAL	62.6

Escalation - There will be a savings of \$44.9 million due to the expenditure of funds earlier with multiyear procurement than with annual procurement.

Vendor Procurement - There will be a savings of \$17.7 million associated with procurement of material from vendors in economic order quantities and avoidance of vendor non-recurring set-up costs.

CH-53E  
IMPACT ON DEFENSE INDUSTRIAL BASE

Improved Competition:

The use of multiyear procurement will not affect competition for the CH-53E, as competition for a program deep into production is not deemed to be cost effective. The prime contractor will however lead competition among selected subcontractors.

Enhanced Investment:

The multiyear procurement of the CH-53E will be for 61 aircraft. The contractor has stated that this quantity of aircraft is not large enough to justify any long term capital investment. Sikorsky has stated that they in fact have in hand the capacity to produce 2.5 CH-53E's per month. Multiyear procurement will not push them to their stated maximum production capability.

Improvement in Vendor Skill Levels:

There is no improvement to vendor skill levels expected, as the quantity of 61 aircraft is a relatively low production run and existing skill levels should suffice.

Training Program:

No new training programs are envisioned. The initial training planned for the transition into production and for subsequent production improvements is considered adequate.

Progress Payment Changes:

Sikorsky has requested 100% progress payments in preliminary MYP discussions. It is felt that they will agree to the standard progress payments of 90-95%.

Use of Multiyear Contractors (Vendors):

Sikorsky will enter into fixed price multiyear contracts with their major subcontractors.

Increased Production Capacity:

As discussed above, multiyear procurement will not affect an increased production capacity at Sikorsky. The multiyear quantity of 61 aircraft over five years is well below Sikorsky's stated evaluation capacity of 30 aircraft per year.

DEPARTMENT OF THE NAVY  
WEAPONS PROCUREMENT, NAVY

JUSTIFICATION OF ESTIMATES FOR FISCAL YEAR 1983 and 1984

TABLE OF CONTENTS

	<u>Page No.</u>
Budget Appendix Extract	2-1
Appropriation Introduction	2-10
Budget Activity Justification	
Activity 1 - Ballistic Missiles	2-14
Activity 2 - Other Missiles	2-21
Activity 3 - Torpedoes and Related Equipment	2-34
Activity 4 - Other Weapons	2-42
Comparison of Program Requirement and Financing	2-48
Analysis of Unobligated Balances	2-54
Missile Modification Back Up Data	2-57



#### WEAPONS PROCUREMENT, NAVY

For construction, procurement, production, modification, and modernization of missiles, torpedoes, other weapons, and related support equipment including spare parts, and accessories therefor; expansion of public and private plants, including the land necessary therefor, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title as required by section 355, Revised Statutes, as amended; and procurement and installation of equipment, appliances, and machine tools in public and private plants; reserve plant and Government and contractor-owned equipment layaway; (\$3,207,100,000) \$3,901,600,000, to remain available for obligation until September 30, (1984) 1985. (10 U.S.C. 5012, 5031, 7201; Department of Defense Appropriation Act, 1982; additional authorizing legislation to be proposed.)

Navy

Weapons Procurement, Navy

C3 FEB 82

## Program and Financing (in thousands of dollars)

Identification code	17-1807-0-1-051	Budget plan (amounts for procurement actions progressed)			Obligations			
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.	
<b>Program by activities:</b>								
<b>Direct:</b>								
1.	Ballistic missiles	875,903	955,000	776,500	891,164	914,167	852,684	
2.	Other missiles	1,341,073	1,590,000	2,352,400	1,019,281	1,463,077	2,023,020	
3.	Torpedoes and related equipment	327,489	473,900	804,900	301,828	450,355	563,922	
4.	Other weapons	193,667	195,500	167,600	186,026	195,736	213,680	
	<b>Total direct</b>	<b>2,738,132</b>	<b>3,215,100</b>	<b>3,901,600</b>	<b>2,400,298</b>	<b>3,023,357</b>	<b>3,653,306</b>	
	Reimbursable program	7,440	5,024	5,000	600	17,985	5,024	
10.0001	<b>Total</b>	<b>2,745,572</b>	<b>3,220,124</b>	<b>3,906,600</b>	<b>2,401,098</b>	<b>3,041,342</b>	<b>3,658,330</b>	
<b>Financing:</b>								
<b>Offsetting collections from:</b>								
11.0001	Federal funds	-2,728	-1,000	-1,000	-1,785	-1,000	-1,000	
13.0001	Trust funds	-4,450	-4,024	-4,000	-4,432	-4,024	-4,000	
14.0001	Non-federal sources	-262			-229			
17.0001	Recoveries of prior year obligations(-)				-4,960			
21.4001	Unobligated balance available, start of year:							
	For completion of prior year budget plans				-728,342	-1,046,772	-1,225,554	
21.4002	Available to finance new budget plans		-27,897			-27,897		
21.4003	Reprogramming from or to prior year budget plan	-30,010						
23.4001	Unobligated balance transferred to other accounts		27,897			27,897		
24.4001	Unobligated balance available, end of year:							
	For completion of prior year budget plans				1,046,772	1,225,554	1,473,824	
24.4002	Available to finance subsequent year budget plans	27,897			27,897			
25.0001	Unobligated balance lapsing	30,010			30,010			
39.0001	<b>Budget authority</b>	<b>2,766,029</b>	<b>3,215,100</b>	<b>3,901,600</b>	<b>2,766,029</b>	<b>3,215,100</b>	<b>3,901,600</b>	
<b>Budget authority:</b>								
40.0001	Appropriation	2,766,029	3,207,100	3,901,600	2,766,029	3,207,100	3,901,600	
42.0001	Transferred from other accounts		8,000			8,000		
43.0001	<b>Appropriation (adjusted)</b>	<b>2,766,029</b>	<b>3,215,100</b>	<b>3,901,600</b>	<b>2,766,029</b>	<b>3,215,100</b>	<b>3,901,600</b>	
<b>Relation of obligations to outlays:</b>								
71.0001	Obligations incurred, net				2,394,652	3,036,318	3,653,330	
72.4001	Obligated balance, start of year				2,705,270	2,817,772	3,411,696	
74.4001	Obligated balance, end of year				-2,817,778	-3,411,696	-4,134,526	
77.0001	Adjustments in expired accounts				19,442			
78.0001	Adjustments in unexpired accounts				-4,960			
90.0001	<b>Outlays</b>				<b>2,296,632</b>	<b>2,442,400</b>	<b>2,930,500</b>	

Navy

Weapons Procurement, Navy

08 FEB 82

## Object Classification (in thousands of dollars)

Identification code	17-1507-0-1-051	1981 actual	1982 est.	1983 est.
Direct obligations:				
122.001	Transportation of things	1,197	3,023	1,820
Other services:				
125.003	Contracts	11,976	16,138	18,270
125.004	Other	35,630	45,345	54,812
125.001	Supplies and materials	2,226,469	2,848,012	3,376,919
131.001	Equipment	124,726	108,639	201,485
199.001	Total direct obligations	2,400,298	3,023,357	3,653,306
Reimbursable obligations:				
226.001	Supplies and materials	760	16,320	4,773
231.001	Equipment	40	1,755	251
299.001	Total reimbursable obligations	800	17,985	5,024
999.901	Total obligations	2,401,098	3,041,342	3,658,330

Navy

## Weapons Procurement, Navy

08 FEB 82

Program and Financing (in thousands of dollars)		1979 Fiscal year program					
Identification code	17-1507-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations		
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
Program by activities:							
Direct:							
1	Ballistic missiles				131,626		
2	Other missiles				41,308		
3	Torpedoes and related equipment				20,546		
4	Other weapons				5,701		
	Total direct				199,181		
	Reimbursable program				200		
10.0001	Total				199,381		
Financing:							
Offsetting collections from:							
11.0001	Adjustment to prior year federal fund orders				519		
13.0001	Adjustment to prior year trust fund orders				374		
17.0001	Recoveries of prior year obligations(-)				-4,806		
	Unobligated balance available, start of year:						
21.4001	For completion of prior year budget plans				-225,478		
21.4002	Reprogramming from or to prior year budget plan	-30,010					
25.0001	Unobligated balance lapsing	30,010			30,010		
40.0001	Budget authority						

Navy

## Weapons Procurement, Navy

08 FEB 82

Program and Financing (in thousands of dollars)				1980 Fiscal year program			
Identification code	17-1507-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations		
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
Program by activities:							
Direct:							
	1. Ballistic missiles				20,721	95,414	
	2. Other missiles				155,087	57,762	
	3. Torpedoes and related equipment				62,646	23,992	
	4. Other weapons				73,767	1,917	
	Total direct				312,103	179,075	
	Reimbursable program				600	11,139	
10.0001	Total				312,703	190,214	
Financing:							
Offsetting collections from:							
11.0001	Adjustment to prior year federal fund order				424		
13.0001	Adjustment to prior year trust fund orders				-356		
14.0001	Adjustment to non-federal sources				33		
17.0001	Recoveries of prior year obligations(-)				-154		
21.4001	Unobligated balance available, start of year				-502,664	-190,214	
24.4001	Unobligated balance available, end of year				190,214		
40.0001	Budget authority						

Navy

## Weapons Procurement, Navy

08 FEB 82

## Program and Financing (In thousands of dollars)

1981 Fiscal year program

Identification code	17-1507-0-1-051	Budget plan (amounts for procurement actions programmed)			Obligations			
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.	
<b>Program by activities:</b>								
<b>Direct:</b>								
1.	Ballistic missiles	875,903			738,817	45,685	91,401	
2.	Other missiles	1,341,073			822,906	332,416	185,752	
3.	Torpedoes and related equipment	327,429			218,734	80,673	28,082	
4.	Other weapons	193,667			108,557	67,021	18,089	
	<b>Total direct</b>	<b>2,738,132</b>			<b>1,889,014</b>	<b>525,794</b>	<b>323,324</b>	
	Reimbursable program	7,440				6,848	594	
10.0001	<b>Total</b>	<b>2,745,572</b>			<b>1,889,014</b>	<b>532,640</b>	<b>323,918</b>	
<b>Financing:</b>								
<b>Offsetting collections from:</b>								
11.0001	Federal funds	-2,728			-2,728			
13.0001	Trust funds	-4,450			-4,450			
14.0001	Non-federal sources	-262			-262			
	Unobligated balance available, start of year:							
21.4001	For completion of prior year budget plans					-636,558	-323,918	
21.4002	Available to finance new budget plans		-27,897			-27,897		
23.4001	Unobligated balance transferred to other accounts		27,897			27,897		
	Unobligated balance available, end of year:							
24.4001	For completion of prior year budget plans				856,558	323,918		
24.4002	Available to finance subsequent year budget plans	27,897			27,897			
40.0001	<b>Budget authority</b>	<b>2,766,029</b>			<b>2,766,029</b>			

Navy

## Weapons Procurement, Navy

08 FEB 82

Program and Financing (in thousands of dollars)		1982 Fiscal year program					
Identification code	17-1507-0-1-051	Budget plan (amounts for procurement actions programed)			Obligations		
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
Program by activities:							
Direct:							
1.	Ballistic missiles		955,000			773,088	72,930
2.	Other missiles		1,590,700			1,072,900	302,500
3.	Torpedoes and related equipment		473,900			345,700	90,000
4.	Other weapons		195,500			126,800	51,600
Total direct			3,215,100			2,318,488	517,230
Reimbursable program			5,024				4,430
10.0001	Total		3,220,124			2,318,488	521,660
Financing:							
Offsetting collections from:							
11.0001	Federal funds		-1,000			-1,000	
13.0001	Trust funds		-4,024			-4,024	
21.4001	Unobligated balance available, start of year						-901,636
24.4001	Unobligated balance available, end of year					901,636	379,976
39.0001	Budget authority		3,215,100			3,215,100	
Budget authority:							
40.0001	Appropriation		3,207,100			3,207,100	
42.0001	Transferred from other accounts		3,000			8,000	
43.0001	Appropriation (adjusted)		3,215,100			3,215,100	

Navy

Weapons Procurement, Nav.

08 FEB 82

Program and Financing (in thousands of dollars)

1983 Fiscal year program

Identification code	17-1507-0-1-051	Budget plan (amounts for procurement actions programed)			Obligations		
		1981 actual	1982 est.	1983 est.	1981 actual	1982 est.	1983 est.
<b>Program by Activities:</b>							
<b>Direct:</b>							
1.	Ballistic missiles	.....	.....	776,500	.....	.....	686,353
2.	Other missiles	.....	.....	2,352,400	.....	.....	1,534,768
3.	Torpedoes and related equipment	.....	.....	604,900	.....	.....	445,840
4.	Other weapons	.....	.....	167,800	.....	.....	143,791
	<b>Total direct</b>	.....	.....	<b>3,901,600</b>	.....	.....	<b>2,812,752</b>
	<b>Reimbursable program</b>	.....	.....	<b>5,000</b>	.....	.....	.....
10.0001	<b>Total</b>	.....	.....	<b>3,906,600</b>	.....	.....	<b>2,812,752</b>
<b>Financing:</b>							
<b>Offsetting collections from:</b>							
11.0301	Federal funds	.....	.....	-1,000	.....	.....	-1,000
13.0001	Trust funds	.....	.....	-4,000	.....	.....	-4,000
24.4001	Unobligated balance available, end of year	.....	.....	.....	.....	.....	1,093,848
40.0001	<b>Budget authority</b>	.....	.....	<b>3,901,600</b>	.....	.....	<b>3,901,600</b>



WEAPONS PROCUREMENT, NAVY  
DETAILED JUSTIFICATION MATERIAL

Appropriation Introduction  
(In Thousands of Dollars)

	<u>FY 1983</u> <u>Estimate</u>	<u>FY 1984</u> <u>Estimate</u>
Appropriation	3,901,600	4,932,309
Total Direct Obligations	3,653,306	-
Total Direct Budget Plan	3,901,600	4,932,309

The Weapons Procurement, Navy appropriation finances the procurement of ballistic, strategic and tactical missiles, torpedoes, mines, guns and support equipment for Naval, Coast Guard and Marine Aviation forces. Support equipment includes: equipment for modification of in-service missiles, torpedoes, mines, guns, and gun mounts; aerial and under-water targets used in training exercises and evaluation; hardware for Navy Navigation and Defense Meteorological satellite programs; spare parts; ground support and training equipment; and industrial facilities and tools required for the production and maintenance of missiles, torpedoes, mines and guns.

Fiscal Year 1983 and 1984 Highlights

The budget programs for the Weapons Procurement, Navy appropriation total \$3,901.6M in FY 1983 and \$4,932.3M in FY 1984. Significant features of these requests are:

(a) A TRIDENT Ballistic Missile request of \$742.8M for 72 missiles in FY 1983 and \$786.8M for 72 missiles in FY 1984 including \$43.3M and \$33.8M for advance procurement to support the FY 1984 and FY 1985 procurements respectively.

(b) \$33.7M in FY 1983 and \$35.0M in FY 1984 for the POSEIDON program, spares and repair parts, ballistic missile modifications, support equipment facilities, and the Navigational Satellite program

(c) A TOMAHAWK Cruise Missile request of \$292.2M for 120 missiles in FY 1983 and \$599.0M for 312 missiles in FY 1984 including \$21.2M and \$23.2M for advance procurement to support the FY 1984 and FY 1985 procurements respectively.

(d) Other Tactical Missile procurements including a FY 1983 request of \$132.8M for 670 SPARROWS, \$41.5M for 500 SIDEWINDERS, \$256.3M for 108 PHOENIXs, \$236.1M for 231 HARPOONS, \$176.8M for 208 HARMS, \$33.1M for 90 LASER MAVERICKS, and \$678.2M for 1,175 STANDARDS, and a FY 1984 request which accelerates the Tactical Missile procurement over the FY 1983 level by procuring 1,220 SPARROWS for \$193.0M, 450 SIDEWINDERS for \$33.3M, 360 PHOENIXs for \$368.8M, 340 HARPOONS for \$339.0M, 250 HARMS for \$155.3M, 350 LASER MAVERICKS for \$49.2M, 195 HELLFIREs (initial production) for \$19.6M, 180 Imaging Infrared MAVERICKS (initial production) for \$34.5M, and 1,450 STANDARDS for \$810.2M.

(e) \$505.4M in FY 1983 and \$447.9M in FY 1984 for Aerial Targets, Fleet Satellite Communications, spares and repair parts, missile modifications, and other items required to support the tactical missile procurements.

(f) An Anti-Submarine Warfare program consisting of a request of \$141.2M for 440 MK-46 torpedoes in FY 1983 and \$255.3M for 1,200 MK-46 torpedoes in FY 1984; a request of \$124.3M for 120 MK-48 torpedoes in FY 1983 and \$132.6M for 144 MK-48 torpedoes in FY 1984; a MK-60 CAPTOR mine request of \$151.4M for 500 mines in FY 1983 and \$183.3M for 600 mines in FY 1984; and procurement of MK-30 Mobile and MK-38 Mini Mobile Targets, initial modification for MK-67 Mobile Mine and related torpedo and mine modification programs, spares and repair parts, and torpedo support equipment totaling \$188.0M in FY 1983 and \$278.9M in FY 1984.

(g) \$167.8M in FY 1983 and \$210.6M in FY 1984 for guns, gun mounts and related support equipment which primarily funds the Close-In-Weapons Systems procurement of 39 systems in FY 1983 and 42 in FY 1984.

#### Financing

The FY 1983 plan of \$3,901.6M and the FY 1984 plan of \$4,932.3M for this appropriation are to be financed by new obligational authority.

Summary of Requirements  
(In Thousands of Dollars)

	<u>FY 1981 Actual</u>	<u>FY 1982 Estimate</u>	<u>FY 1983 Estimate</u>
1. Ballistic Missiles	875,903	955,000	776,500
2. Other Missiles	1,541,073	1,590,700	2,352,400
3. Torpedoes and Related Equipment	327,489	473,900	604,900
4. Other Weapons	193,667	195,500	167,800
TOTAL Direct Program	2,738,132	3,215,100	3,901,600
Reimbursable Program	7,440	5,024	5,000
TOTAL Program Requirements	2,745,572	3,220,124	3,906,600
Less: Portion of program to be obligated in subsequent fiscal year	656,558	901,636	1,093,848
Plus: Obligations incurred against prior year program funds	512,084	722,854	845,578
TOTAL Obligations	2,401,098	3,041,342	3,658,330

Summary of Requirements  
(In Thousands of Dollars)

	<u>FY 1984 Estimate</u>
1. Ballistic Missiles	821,825
2. Other Missiles	3,049,819
3. Torpedoes and Related Equipment	850,112
4. Other Weapons	210,553
TOTAL Direct Program	\$4,932,309

Budget Activity 1: Ballistic Missiles

(\$ in thousands)  
FY 1984 Estimate - 3821,825  
FY 1983 Estimate - 3776,500  
FY 1982 Estimate - 3955,000  
FY 1981 Actuals - 3875,903

Purpose and Scope of Work

These funds provide for the procurement of fleet ballistic missiles, ancillary checkout and test equipment, missile modifications, and support equipment and facilities required to outfit and support the submarines assigned to the seabased strategic deterrent forces.

Justification of Funds

Of the \$776.5 million requested in FY 1983, \$752.5 million is for ballistic missiles, \$7.5 million is for ballistic missile modifications and \$16.5 million is for support equipment facilities.

Of the \$821.8 million requested in FY 1984, \$795.6 million is for ballistic missiles, \$10.1 million is for ballistic missile modifications and \$16.1 million is for support equipment and facilities.

Ballistic Missiles

(\$ in thousands)  
FY 1984 Estimate 72 \$795,600  
FY 1983 Estimate 72 \$752,500  
FY 1982 Estimate 72 \$925,000  
FY 1981 Actuals 72 \$855,003

Of the \$752.5 million requested for ballistic missiles in FY 1983, \$9.7 million is for POSEIDON, \$699.5 million is for the TRIDENT and TRIDENT backfit programs and \$43.3 million is for Advance Procurement for future year TRIDENT procurements.

Of the \$795.6 million requested for ballistic missiles in FY 1984, \$8.8 million is for POSEIDON, \$753.0 million is for the TRIDENT and TRIDENT backfit programs, \$33.8 million is for Advance Procurement for the final TRIDENT missile procurement in FY 1985.

#### POSEIDON

(\$ in thousands)					
	FY 1983			FY 1984	
	QTY	Amount		QTY	Amount
Procurement	-	\$ 9,700		-	\$ 8,800
Initial Spares	-	-0-		-	-0-
Procurement Cost	-	\$ 9,700		-	\$ 8,800

To maintain the effectiveness of the Fleet Ballistic Missile System against postulated enemy defensive capabilities of the next decade, the Navy was directed in FY 1966 to develop and deploy the POSEIDON weapon system. The principal advantage of POSEIDON over its predecessor the POLARIS is in its adaptability to overcome a broad spectrum of defenses, as they may materialize from Soviet ASW and ABM development programs. Procurement has been programmed to sustain deliveries and support commensurate with SSBN deployment schedules.

The POSEIDON procurement request of \$9.7 million in FY 1983 includes \$7.7 million for missile support; and \$2.0 million for DOD components.

#### TRIDENT

(\$ in thousands)				
	FY 1983		FY 1984	
	QTY	Amount	QTY	Amount
Procurement	72	\$699,500	72	\$753,000
Initial Spares	-	-0-	-	-0-
Procurement Cost	72	\$699,500	72	\$753,000

The TRIDENT mission is to provide an undersea missile system in order to ensure that the U.S. continues to maintain a credible deterrent independent of foreseeable threats in the 1980's and beyond. To accomplish this mission, the TRIDENT I missile was developed to support two separate systems. The TRIDENT system is comprised of a CONUS based nuclear powered submarine equipped with long range TRIDENT I strategic missiles and associated direct support shore facilities. The TRIDENT I Backfit system is to provide TRIDENT I missiles for backfit into existing POSEIDON submarines, thus giving these submarines a greater range of patrol in order to ensure their survivability in the event of unforeseeable enemy breakthroughs in ASW capabilities.

The FY 1983 TRIDENT request of \$699.5 million represents the seventh year of procurement of the TRIDENT missiles to support both the TRIDENT and TRIDENT Backfit systems. This funding provides \$567.5 million for missile production; \$102.3 million for production support costs; and \$29.7 million for reentry system components.

The FY 1984 TRIDENT request of \$753.0 million provides for the eighth planned procurement of TRIDENT missiles to support the TRIDENT and TRIDENT Backfit systems. This funding provides \$606.8 million for missile production; \$103.4 million for production support costs; and \$42.8 million for reentry system components.

Within the current TRIDENT program of 630 missiles procured between FY 1977 and FY 1985, missile production deliveries are scheduled at quantities necessary to maintain quality, a smooth production rate and provide for SSBN outload requirements, replacement of missiles returned from the fleet for repair and surveillance and expenditures during demonstration firings and operational tests.

Based on current program guidance TRIDENT missile procurements will support the ultimate deployment of [ ] TRIDENT submarines, [ ] Backfit submarines, and additional missiles to continue the Fleet Return and Evaluation Program (FREP) and DASO/FCT test programs.

TRIDENT Advance Procurement

(\$ in thousands)  
FY 1984 Estimate - \$ 33,800  
FY 1983 Estimate - \$ 43,300  
FY 1982 Estimate - \$241,300  
FY 1981 Actuals - \$143,503

This procurement line item funds the advance procurement of various components of the TRIDENT missile, guidance system, and reentry system which are required in support of future TRIDENT missile procurements. Certain specific components of the reentry system, although integral to the reentry body assembled and delivered by the Department of Energy (DOE) are funded and procured by DOD, including some elements of the arming, fuzing and firing system. Due to current production limitations of many defense contractors there has been a drastic growth in production leadtimes of several TRIDENT missile components which had been previously procured under the TRIDENT missile line item. Requirements for these items have been separately identified as missile and reentry system long lead subcomponents. The preponderance of funds requested here provide for production continuity procurement of a variety of component materials which must be produced at a given, uninterrupted rate on a production line and life-of-type or one-time procurement of the quantity of a material or component to support the total planned program. The quality and homogeneity obtained by this means is essential to assure consistent reliability of the missiles to be procured for the TRIDENT program. The sum of production continuity quantities of these materials and quantities procured for missiles fully funded in the procurement line item is determined by production rate and quality control considerations and forms the basis for cost estimates which are highly dependent upon rate quantity.



#### Modification of Missiles

(\$ in thousands)  
FY 1984 Estimate - \$ 10,100  
FY 1983 Estimate - \$ 7,500  
FY 1982 Estimate - \$ 10,100  
FY 1981 Actuals - \$ 8,000

Requirements for POSEIDON missile alterations (SPALTs) are determined only after thorough investigation has established the need for a change in system or equipment configuration; the total estimated cost and the impact of the proposed change has been defined and the proposal is subjected to severe screening to determine a positive advantage to the system.

Missile SPALTs for POSEIDON are authorized only when correction of a known deficiency is required, or a component is no longer procureable in its original configuration and it is necessary to accept a substitute part of an existing subassembly.

#### POSEIDON Modifications

(\$ in thousands)  
FY 1984 Estimate - \$10,100  
FY 1983 Estimate - \$ 7,500  
FY 1982 Estimate - \$10,100  
FY 1981 Actuals - \$ 8,000

The FY 1983 request completes funding for the TVC Gas Generator SPALT and continues funding the alternate Nose Cap Exchange program. The FY 1984 request completes funding for the Nose Cap exchange program and commences funding of the G3 Nozzle SPALT.

Support Equipment and Facilities

(\$ in thousands)

FY 1984 Estimate - \$16,125  
FY 1983 Estimate - \$16,500  
FY 1982 Estimate - \$19,900  
FY 1981 Actuals - \$12,900

The support equipment and facilities requests provide for the procurement of TRIDENT initial and, beginning in FY 1982, replenishment spares and repair parts; POLARIS and POSEIDON replenishment spares and repair parts; missile industrial facilities; and the launch and satellite support necessary to maintain the Navy Navigation Satellite system.

Spares and Repair Parts

(\$ in thousands)

FY 1984 Estimate - \$ 1,825  
FY 1983 Estimate - \$ 1,100  
FY 1982 Estimate - \$ 1,900  
FY 1981 Actuals - \$ 1,800

Missile spares and repair parts are required to maintain inventories of missiles, and missile ground support equipment to insure maximum readiness of the Fleet Ballistic Missile System. To meet this requirement, both initial and replenishment spares and repair parts are procured for FBM and TRIDENT.

TRIDENT initial system stock support was provided through an Integrated Production and Depot Support (IPADS) concept under the TRIDENT full funding line which provides support during production from production/buffer stock. There are no initial spares requirements beyond FY 1981.

Replenishment spare parts levels are determined by analysis of projected usage rates and available assets necessary to maintain the required inventories of components. The FY 1983 and FY 1984 request includes replenishment spares for POSLIDON and TRIDENT.

#### Missile Industrial Facilities

(\$ in thousands)  
FY 1984 Estimate - \$2,600  
FY 1983 Estimate - \$2,600  
FY 1982 Estimate - \$1,900  
FY 1981 Actual - \$ 200

Funding for Missile Industrial Facilities provides for capital rehabilitation of civil works and equipment, equipment and civil works improvements, emergency repair and modifications to production equipment and accessories at the Navy-owned Naval Industrial Reserve Ordnance Plant (NIROP) at Sunnyvale, California, for capital rehabilitation and civil works improvements at the NIROP at Bacchus, Utah; and for civil works improvements at Air Force Plant 78 near Brigham City, Utah.

Capital rehabilitation and improvement requirements in FY 1983 and FY 1984 include: Non-severable civil works additions and modifications to Navy and Air Force owned buildings; improvements to building equipments that are generated as a result of safety and security requirements; replacement and rehabilitation of aging plant equipment items; rehabilitation and environmental equipment to control the discharge of pollutants into the atmosphere; and fire protection equipment to support more efficient production and test operations.

The funds requested here are considered the minimum necessary to implement energy saving and environmental protection measures at the NIROP, Sunnyvale which are dictated by increasingly more stringent state and local regulations. This funding is also required for capital rehabilitation and civil works improvements at these facilities and the Santa Cruz Test Facility. Typical individual projects would include the rehabilitation of necessary production equipment and modifications to manufacturing and product assurance areas to support tooling and equipment.

Astronautics

(S in thousands)

FY 1984 Estimate	- \$11,700
FY 1983 Estimate	- \$12,800
FY 1982 Estimate	- \$16,100
FY 1981 Actual	- \$10,900

To maintain an adequate constellation of navigation satellites in orbit, the WPN appropriation provides for the procurement of satellites, launch vehicles and sustaining support costs. The FY 1983 and FY 1984 budget requests provide funding for launch and satellite support to maintain the current operational constellation and for storage and testing of the existing OSCAR satellite inventory. The satellite launch schedule was one NOVA in FY 1981, and plans for one NOVA in FY 1982 and one OSCAR in FY 1984.

Current requirements are based on maintaining SCOUT as the primary launch booster for the Navigation Satellite System indefinitely.

Budget Activity 2: Other Missiles

(Dollars in Thousands)

FY 1984 Estimate - \$3,049,819  
FY 1983 Estimate - \$2,352,403  
FY 1982 Estimate - \$1,550,700  
FY 1981 Actual - \$1,341,073

Purpose and Scope of Work

Funds budgeted under this activity finance the procurement, modification and spare parts requirements for strategic and tactical guided missiles and aerial targets required for Navy and Marine Corps aircraft and Navy ships. In addition, funds provide for weapons industrial facilities and for the support of satellites, launchers, and associated equipment for the Fleet Satellite Communication System.

Guided missiles are procured for operational inventory requirements and combat usage as well as for quality assurance testing and training purposes. Aerial targets are required to support training programs and to permit evaluation of missile performance. Procurement funds provide for: (1) the components which comprise the end-items, such as guidance, control, motors, warheads, and fuzes; (2) effort and hardware associated with the production and assembly of these items, such as production engineering, production proofing, tools and test equipment; (3) special handling and test equipment, training materials and other specialized items required for operational Fleet support of the item.

Justification of Funds

The Chief of Naval Operations establishes operational and training objectives consistent with the Navy's assigned role in the nation's defense. These objectives are translated into annual procurement programs in accordance with logistics guidance set forth by the Secretary of Defense, taking into account available fiscal resources. The resultant procurement plan is designed to maintain an effective mix of weapons in the combat inventory and to provide weapons and targets in support of training, evaluation, and pipeline requirements. In developing the plan, the Navy considers production feasibility and assures that missile deliveries are compatible with aircraft and ship testing, production, development and deployment schedules.

The following paragraphs provide justification for the Other Missiles procurement programs. Initial spare parts amounts are included for information under each missile but are separately justified in the spares and repair parts category.

### Strategic Missiles

(Dollars in Thousands)

FY 1984 Estimate - \$599,048  
FY 1983 Estimate - \$292,163  
FY 1982 Estimate - \$125,200  
FY 1981 Actual - \$175,500

### BGM-109 (TOMAHAWK Cruise Missile)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	120	\$292,163	312	\$599,048
Initial Spares	-	16,192	-	20,926
Procurement Cost		\$308,355		\$619,974

The TOMAHAWK Cruise Missile provides an attack capability against targets at sea (anti-ship TOMAHAWK) and on land (land attack TOMAHAWK). TOMAHAWK is capable of being launched from aircraft, ships, submarines, and ground launchers. The basic missile can be fitted with either a conventional high explosive or nuclear warhead. The TOMAHAWK is propelled in flight by a small turbofan engine. It is 20.5 feet in length (with booster), 21 inches in diameter, and weighs 4,200 lbs. with its capsule. The FY 1983 request for \$292.2 million, which includes \$21.2 million of advance procurement for FY 1984, will procure 54 anti-ship and 66 land attack missiles.

### Tactical Missiles

(Dollars in Thousands)

FY 1984 Estimate - \$2,104,904  
FY 1983 Estimate - \$1,636,707  
FY 1982 Estimate - \$1,216,600  
FY 1981 Actual - \$ 976,160

Funds budgeted under this category finance the procurement of air, surface, and sub-surface launched missiles and aerial targets.

### AIM/RIM-7F/M (SPARROW III)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	670	\$132,800	1220	\$193,000
Initial Spares		5,733		6,240
Procurement Cost		\$138,533		\$199,240

SPARROW is a supersonic, all-weather, all-aspect-capable, air-to-air missile employed by F-4, F-14, and F-15 aircraft against high performance aircraft at altitudes from sea level to \_\_\_\_\_ feet. The new monopulse seeker (AIM-7M), which has improved electronic countermeasures, fuzing and look down/clutter capability, was introduced into the FY 1980 procurement. The RIM-7M for surface launch will eventually replace both the RIM-7E and RIM-7H, with initial procurement of 80 RIM-7M's commencing in FY 1981. The \$132.8 million requested in FY 1983 provides for the procurement of 670 AIM/RIM-7M missiles at a cost of \$129.6 million, and equipment to support SPARROW missiles already in the Fleet at a cost of \$3.2 million. The 670 missiles are required to supplement the inventory, as older models of SPARROW are expended. The FY 1983 AIM/RIM-7M missiles will be produced by Raytheon and General Dynamics. The AIM-7E/F support funds will finance training material, depot checkout equipment, and publications required to maintain the operational readiness of that missile to the Fleet, and to support the surface-to-air version of the AIM-7E (SEASPARROW).

AIM-9L/M (SIDEWINDER)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	500	\$41,471	450	\$33,297
Initial Spares		1,631		1,435
Procurement Cost		\$43,102		\$34,732

The SIDEWINDER AIM-9L/M is a joint USN/USAF short range, air-to-air, infrared (IR) dogfight missile employed by both fighter and attack aircraft. The all-aspect launch capability is a significant improvement over previous SIDEWINDER versions and greatly increases the firing envelope. The AIM-9M, a product improvement of the AIM-9L, provides for improved counter-countermeasures capability and an improved ability to acquire targets in a high IR clutter background. The procurement of 2420 guidance units (500 USN/1920 USAF) in FY 1983 will be competed between the two mobilization base sources, Ford Aerospace and Raytheon, with the winner being awarded a larger quantity. The \$41.5 million requested in FY 1983 represents the Navy portion of funding in support of the FY 1983 procurement.

AIM-54A/C (PHOENIX)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	108	\$256,300	360	\$368,800
Initial Spares		14,530		16,232
Procurement Cost		\$270,830		\$385,032

The PHOENIX missile system is comprised of a long-range airborne weapon control system (AN/AWG-9) with multiple target-handling capabilities and long-range missiles utilizing semi-active mid-course and active terminal guidance. The mission is to kill multiple air targets with conventional warheads. Six such missiles can be carried aboard the F-14. Near simultaneous launch is possible against six targets in an all weather, heavy jamming environment. The improved Phoenix missile, the AIM-54C, will provide improved lethality, stream raid discrimination, ECCM performance, high and low altitude performance, and improved reliability and maintainability. As a result of these improvements, the missile will have greater capability to counter the projected MIG-25 FOXBAT and Cruise Missile threats. The PHOENIX does not replace any other missile. The \$256.3 million requested in FY 1983, which includes \$34.2 million of advance procurement for FY 1984, will finance the procurement of 108 AIM-54C improved version PHOENIX missiles.

AGM/RGM/UGM-84A (HARPOON)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	231	\$236,136	340	\$339,007
Initial Spares		20,625		15,183
Procurement Cost		\$266,761		\$354,190

The HARPOON is an air/surface/sub-surface launched anti-ship cruise missile. It uses an active radar seeker, radar altimeter, and altitude reference assembly in conjunction with a small digital computer for missile guidance and control. It is propelled by a turbo-jet sustainer engine augmented by a solid booster for ship/submarine launch. The missile has a standard 13.5 inch diameter with a length and weight (1100 pounds for air launch and 1400 pounds for ship launch) sufficient for compatibility with the TARTAR, TERRIER, and ASROC ship launchers as well as with aircraft launch stations. The HARPOON missile can maintain a mach cruise speed at altitudes of feet and provides effective target acquisition and tracking up to sea state . The missile is planned for use aboard the FF-1052, DDG and DD-963, CG, CGN, PHM, BB, and FFG class ships, the P-3, A-6, and P/A-18 aircraft, and nuclear attack submarines. The 1983 request of \$236.1 million provides for procurement of 231 HARPCON missiles.

AGM-88A (HARM)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	208	\$176,000	250	\$155,300
Initial Spares		8,659		8,502
Procurement Cost		\$185,459		\$163,802



The High Speed Anti-Radiation Missile (HARM) is an air-to-surface missile designed to suppress or destroy land and sea-based radars supporting enemy air defense systems. HARM is a design evolution of current ARM weapons, SHRIKE and STANDARD ARM, and is planned to replace both in the Navy inventory. HARM characteristics include: high speed, large launch envelope, wide band frequency coverage in a single head, high sensitivity, and compatibility with various naval aircraft. The HARM has evolved from known and predicted deficiencies in SHRIKE and STANDARD ARM in defeating current and future enemy air defense systems. Initial procurement, for Navy only, commenced in FY 1981 as planned. A joint USN/USAF procurement in FY 1982 is in process. The FY 1983 request of \$176.8 million, which includes \$40.0 million for second source development, will procure 268 missiles for the Navy.

RIM-66B (STANDARD MEDIUM RANGE SM-1)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	650	\$252,600	700	\$259,200
Initial Spares		8,188		5,022
Procurement Cost		\$260,788		\$264,222

The STANDARD MR (SM-1), which has been in production since 1967, is operational on guided missile cruisers, destroyers and frigates. SM-1 is a supersonic medium range tactical missile utilizing semi-active homing guidance. It provides the fleet with medium range anti-air-warfare capability against aircraft and missiles and a surface-to-surface capability against ships. The present production version utilizes a monopulse receiver common with SM-2 and a common SM-1/2 fuze. This version increases commonality with SM-2 and improves performance in the area of ECCM, maneuvering targets and low altitude fuzing. In FY 1982 SM-2 implemented a five year multi-year contract for the rocket motor with Aerojet. In FY 1983 this type of contract will also be utilized for the guidance and control section procurement. Pertinent data concerning these two contracts is as follows:

	Fiscal Year	No. of Units	Total Contract Price	Planned Savings
Rocket Motor	1982-1986	3350	\$ 58.0 million	\$ 6.7 million (10.4%)
Guidance & Control	1983-1987	3450	\$588.6 million	\$62.0 million ( 9.5%)

The FY 1983 request includes \$60.3 million for advance procurement to support the multi-year contracts. In FY 1984, \$42.8 million is included for advance procurement requirements.

RIM-66C (STANDARD MEDIUM RANGE SM-2)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	150	\$122,800	300	\$203,700
Initial Spares		2,206		5,394
Procurement Cost		\$125,006		\$208,094

The STANDARD MR (SM-2) production began in FY 1980. SM-2 MR incorporates mid-course guidance capability, an inertial reference system and improved electronic counter-countermeasure capability. It is identical with the SM-2 Extended Range (ER) except for mid-course command implementation and propulsion. SM-2 MR increases weapon system firepower, range and area coverage, and upgrades ECCM immunity. SM-2 MR production is in support of Aegis ships and TARTAR nuclear cruisers. FY 1983 introduces Pilot Production of the Block II missile with improved propulsion warhead, and guidance designs to cope with the stringent ASM threat. The FY 1983 request will provide 150 RIM-66C missiles for the AEGIS and TARTAR cruisers.

RIM-67A/B (STANDARD EXTENDED RANGE SM-2)

(Dollars in Thousands)

	FY 1982		FY 1983	
	Qty	Amt	Qty	Amt
Procurement	375	\$302,800	450	\$347,300
Initial Spares		7,245		11,718
Procurement Cost		\$310,045		\$359,018

The STANDARD missile extended range (SM-1), which is operational on Terrier guided missile destroyers and cruisers uses semi-active homing missile guidance from launch to target. This missile is a supersonic extended range missile and provides all-weather anti-aircraft and surface-to-surface capability incorporating advanced solid-state electronic and engineering concepts. STANDARD ER defends against high performance aircraft, anti-ship missiles and surface targets. \$6.7 million of the request in FY 1983 will provide Fleet support for STANDARD ER (SM-1) missiles currently in inventory. SM-2 STANDARD ER initial production occurred in FY 1976, and the missiles are presently deployed in the USS Mahan, USS Belknap, and USS Jouett. This missile provides increased range and higher performance. The SM-2 (ER) differs from SM-1 (ER) as follows: A mid-course guidance capability, an inertial reference system and electronic counter-countermeasures (ECCM) improvements providing immunity from electronic jamming. The FY 1983 request of \$302.8 million associated with SM-2 provides 375 missiles in support of continued deployment in Terrier cruisers and destroyers.

HELLFIRE

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	-	-	195	\$19,600
Initial Spares	-	-	-	-
Procurement Cost	-	-	-	\$19,600

HELLFIRE, currently being developed by the Army, will provide the US Marine Corps with an extremely effective anti-armor weapon for use on AH-1T/J helicopters. Procurement is scheduled to commence in FY 1984 with an initial production of 195 missiles for \$19.6 million.

AGM-65E (LASER MAVERICK)

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	90	\$33,100	350	\$49,200
Initial Spares	-	-	-	323
Procurement Cost	-	\$33,100	-	\$49,523

The LASER MAVERICK, a forward fired laser guided missile which can be employed from land or carrier based aircraft, will be delivered primarily for A-4M Marine Corps aircraft and will be used for interdiction, close air support and strike requirements against both land and sea targets. \$33.1 million is requested in FY 1983 for initial procurement of 90 Laser MAVERICK missiles and \$49.2 million is requested in FY 1984 for follow-on Laser MAVERICK missile procurement.

IIR MAVERICK

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	-	-	180	\$34,500
Initial Spares	-	-	-	-
Procurement Cost	-	-	-	\$34,500

The IIR MAVERICK is currently being developed as a joint service program with the Air Force as executive service. The Navy version of the weapon will utilize the IIR guidance unit optimized for ship tracking, an improved warhead, and a reduced smoke rocket motor. The IIR MAVERICK will provide the Navy and Marine Corps with the capability to attack land and sea targets from more survivable position below and outside of close-in air defense systems. Initial production is planned for FY 1984, with the Navy procuring 180 missiles.

Other Missile Support

(Dollars in Thousands)

	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement		\$5,300		\$5,800
Initial Spares		-		-
Procurement Cost		\$5,300		\$5,800

The Other Missile Support program provides for Fleet support requirements for the following missiles now in the Fleet.

Missile	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
RIM-2E TERRIER		\$ 500		\$1,000
UUM-44A SUBROC		4,800		4,800
TOTAL		\$5,300		\$5,800

Material procurement includes depot checkout equipment, special handling equipment (Depot and Squadron), training material expendables (UHF exercise sections for non-combat firings), non-expendable training material (DUSAMS, TSAMS, and IDMS), and documentation.

Aerial Targets

(Dollars in Thousands)

	FY 1983				FY 1984			
	QTY	AMT	SPARES	TOTAL	QTY	AMT	SPARES	TOTAL
AQM-37A	100	\$ 9,000	\$ 500	\$ 9,500	200	\$22,000	\$ 500	\$22,500
MQM/BQM-74A/C	350	61,500	531	62,031	350	66,700	551	67,251
All Other Targets		6,100	100	6,200		7,500	100	7,600
		\$76,600	\$1,131	\$77,731		\$96,200	\$1,151	\$97,351

Aerial targets provide realistic presentations of potential threats and are used for training and for maintaining the skills of Navy personnel in the use of missiles and anti-aircraft guns. The recoverable, subsonic MQM-74A/C is primarily required for missile and anti-aircraft gunnery exercises. The BQM-74C is an air-launched version of the MQM-74A/C and its procurement accounts for \$61.5 million of the total \$76.6 million requested in FY 1983. The remaining \$15.1 million finances the procurement of 100 AQM-37A targets and the procurement of a variety of low-cost targets and auxiliary equipment required for training purposes.

Modification of Missiles

(Dollars in Thousands)

FY 1984 Estimate - \$107,740  
FY 1983 Estimate - \$74,190  
FY 1982 Estimate - \$39,700  
FY 1981 actual - \$17,739

The FY 1983 budget request for missile modification is \$74.2 million. This budget request includes funds for air-launched and surface-launch missile modifications. Funds requested provide for the procurement of modification kits only; all installation costs are budgeted in the Operations and Maintenance, Navy appropriation.

<u>Air-Launched Missiles</u>		<u>Surface-Launched Missiles</u>	
SPARROW*	\$ 7,690	STANDARD MR	\$2,600
SIDEWINDER	46,200	STANDARD ER	3,000
PHOENIX	6,600		\$5,600
HARPOON*	8,100		
	<u>\$68,590</u>		

Funds for FY 1983 air-launched missiles are required to improve and update the operational characteristics of SPARROW, SIDEWINDER, PHOENIX, and HARPOON missiles and assorted support equipment. The SPARROW request, budgeted at \$7.7 million, provides for various modifications, including the procurement of kits to continue the Product Optimization Program (POP), which is designed to correct deficiencies in mainbeam clutter, fuzing on jet engine modulation, narrow band jammer, mutual aircraft interference, and auto-pilot separation. The SIDEWINDER modification program, budgeted at \$46.2 million, provides for a capability improvement of the AIM-9H and for the initial procurement of missile components to convert existing AIM-9H and -9L missiles in inventory to the -9M configuration. The PHOENIX modification program (\$6.6 million) provides for initial effort to retrofit AIM-54A missiles to the AIM-54C configuration, as well as the incorporation of changes to missile test nets to improve testing reliability. The HARPOON program, budgeted at \$8.1 million, provides for various modifications to improve reliability and maintainability, to improve terminal homing capability in an ECM environment, and to enhance performance and survivability.

The FY 1983 surface-launch missile modification program is budgeted at \$5.6 million. Funds for STANDARD MR modifications are for regaining/reloading of the MK-56 rocket motor. STANDARD ER modifications include reconfiguring MK-7 sustainer sections to the MK-30 version, and upgrading of MK-12 boosters to reduce resonant burning and rough separation.

\* SPARROW and HARPOON can also be surfaced-launched

Air-Launched Missiles

SPARROW	\$ 2,740
SIDEWINDER	40,600
PHOENIX	54,600
HARPOON	3,500
	<u>\$101,440</u>

FY 1984

Surface-Launched Missiles

STANDARD MR	\$2,700
STANDARD ER	3,600
	<u>\$6,300</u>

The FY 1984 funds required for air-launched missiles are budgeted at \$101.4 million and continue required modifications for SPARROW, SIDEWINDER, PHOENIX, and HARPOON missiles. The FY 1984 request includes funding for the procurement of kits to upgrade the PHOENIX from "A" to "C" configuration, as well as the procurement of additional components to continue the upgrading of the SIDEWINDER inventory to the AIM-9M configuration.

The FY 1984 surface-launch missile modification program, budgeted at \$6.3 million, continues the required modifications of STANDARD MR and ER rocket motors and sustainer sections.

Support Equipment and Facilities

(Dollars in Thousands)

FY 1984 Estimate	- \$238,127
FY 1983 Estimate	- \$349,340
FY 1982 Estimate	- \$109,200
FY 1981 Actual	- \$171,674

Support Equipment and Facilities include Initial Spares, Replenishment Spares, Weapons Industrial Facilities, Energy Conservation, and Fleet Satellite Communications programs.

Spares and Repair Parts

(Dollars in Thousands)

<u>FY 1983</u>	<u>FY 1984</u>
\$103,540	\$98,627

Expendable items, such as guided missiles and non-recoverable target drones, require spares and repair parts for the repair of missiles or components which fail or are damaged while in the Fleet. For recoverable target drones, additional spares and repair parts are required to repair damage incurred in flight and recovery operations and for control and telemetry equipment. The FY 1983 and FY 1984 estimates for initial spares are \$96.0 million and \$91.0 million respectively, and the estimates for replenishment spare parts are \$7.5 million and \$7.6 million respectively. The following table shows a breakdown, by line item, of the initial spare parts and the number of missiles being procured in that particular year.

	Dollars in Millions			
	FY 1983		FY 1984	
	Amount	Missile Qty	Amount	Missile Qty
<u>Tactical Missiles</u>				
TOMAHAWK	\$16.2	120	\$20.9	312
SPARROW	5.7	670	6.2	1,220
SIDEWINDER	1.6	500	1.4	450
PHOENIX	14.5	108	16.2	360
HARPOON	30.6	231	15.2	340
HARM	8.7	208	8.5	220
STANDARD ER	7.2	375	11.7	450
STANDARD MR (SM-1)	8.2	650	5.0	700
STANDARD MR (SM-2)	2.2	150	4.4	300
LASER MAVERICK	-	90	.3	350
Aerial Targets	1.1	-	1.2	-
TOTAL	\$96.0		\$91.0	

Requirements for Navy initial spares support are determined by detailed provisioning procedures which take into account a number of factors, such as the use of the end-item, usage rate trends, engineering judgment, and surveillance program data.

For new and sophisticated missiles, the initial spares estimate includes an amount for "contractor support" of the system prior to operational service. Such contractor support takes the form of providing initial spares before Fleet usage data is available or missile design is frozen. Any assets remaining at the end of the contractor support phase are applied against future Navy spares and repair parts requirements.

Requirements for replenishment spares and repair parts are derived utilizing a stratification technique. This technique considers the number of missiles in the Fleet, Fleet data of spare parts usage, Ready-For-Issue (RFI) spares returning from rework and repair programs, and equipment leadtimes to derive net fiscal year budget requirements. FY 1983/FY 1984 replenishment spares and repair parts are required as follows:

	(Dollars in Millions)	
	FY 1983	FY 1984
<u>Replenishment Spares</u>	\$7.5	\$7.6
Air Launched	(3.6)	(2.0)
Surface launched	(3.9)	(5.6)

### Weapons Industrial Facilities

(Dollars in Thousands)

<u>FY 1983</u>	<u>FY 1984</u>
\$11,800	\$13,700

The FY 1983/1984 estimates of \$11.8 million and \$13.7 million, respectively, for missile and other ordnance-producing industrial facilities include funds for three categories of production support. The first of these categories, restoration and replacement of machine tools and related production equipment, accounts for \$2.0 million in FY 1983 and \$3.9 million in FY 1984. This program is designed to provide and maintain an efficient and economical production capability through the procurement of modern machine tools to replace obsolete equipment or the restoration or modification of tools which are worn or require updating. Inefficient government-owned equipment is replaced or rehabilitated only when: (1) the contractor is unwilling or unable to fund the project; or (2) the project will reduce the end-item costs to the government and improve the industrial readiness posture. All actions undertaken in this program are subjected to close scrutiny to assure rapid amortization of procurement costs and maximum practicable usage of tools in inventory.

The second category, capital maintenance, emergency repairs, and fire protection improvements, is budgeted at \$6.6 million in FY 1983 and \$6.5 million in FY 1984. These funds provide for non-recurring capital maintenance at government-owned missile and weapon-producing industrial plants as well as emergency repairs and improvements designed to reduce fire and other safety hazards.

The third category is the modernization of ordnance production facilities. The budgeted amount of \$3.2 million in FY 1983 and \$3.3 million in FY 1984 will provide for a time-phased plan to modernize NIROP Pomona to meet needs forecast for STANDARD MISSILE SM-2, SPARROW missile, the Close-In Weapons System, and other missile programs.

### Energy Conservation

(Dollars in Thousands)

<u>FY 1983</u>	<u>FY 1984</u>
\$2,700	\$2,800

These funds are provided for weapons related Government Owned Contractor Operated (GOCO) plants which were constructed at the beginning of World War II without regard for energy consumption or conservation. Energy consumption can be significantly reduced by providing for insulation of walls and roof; by the replacement of obsolete/inefficient lighting systems; and the conversion of gas/oil heating plants.



Fleet Satellite Communications

(Dollars in Thousands)

<u>FY 1983</u>	<u>FY 1984</u>
\$231,300	\$123,000

The Fleet Satellite Communications (FLTSATCOM) system satisfies the Navy's urgent worldwide Ultra High Frequency (UHF) mobile user communication requirements. This includes protected fleet broadcast service to all Navy ships plus a vital command control service to all Anti-Submarine Warfare (ASW) platforms, Fleet Ballistic Missile (FBM) submarines, aircraft carriers, cruisers, and other selected aircraft, ships, and submarines. In addition, the systems are capable of satisfying the Air Force equatorial satellite communication requirements including presidential airborne command posts, Strategic Air Command and emergency mission support communications. A constellation of channelized satellites, placed in geo-stationary orbits, each having an effective radiated nominal power of 5,495 watts, is needed to meet the designated Navy and Air Force UHF communications requirements. The worldwide four satellite constellation FLTSATCOM system is fully operational and is meeting or exceeding performance requirements. Satellite F-5 was launched on 5 August 1981 as an operational spare but incurred serious damage during launch.

The \$231.3 million requested in FY 1983 will provide for additional long lead items for three spacecraft and three launch vehicles plus complete purchase of two spacecraft (F-6 and F-7) and two launch vehicles for launches scheduled in FY 1985 and FY 1986. Funds have been included for engineering and NASA support.

The \$123.0 million requested in FY 1984 will provide for the procurement of one spacecraft (F-8) and one launch vehicle plus engineering and NASA support.

Budget Activity 3: Torpedoes and Related Equipment

(\$ in Thousands)

FY 1984 Estimate - \$850,112  
FY 1983 Estimate - \$604,900  
FY 1982 Estimate - \$473,900  
FY 1981 Actual - \$327,489

Purpose and Scope of Work: These funds provide for the procurement of anti-submarine/ship weapons such as torpedoes, mines and underwater targets, torpedo and mine modifications, and associated support equipment items related to production, as well as acquisition of other equipment and support necessary to maintain fleet readiness.

Justification of Funds:

Of the \$604.9 million requested in FY 1983, \$448.7 million is for procurement of torpedoes and related equipment, \$89.3 million is for modification of torpedoes and related equipment, and \$66.9 million is for procurement of support equipment including spares and repair parts.

Of the \$850.1 million requested in FY 1984, \$615.0 million is for procurement of torpedoes and related equipment, \$164.5 million is for modification of torpedoes and related equipment, including initial acquisition of MK-48 ADCAP modification kits, and \$70.6 million is for procurement of support equipment including spares and repair parts.

Torpedoes and Related Equipment

(\$ in Thousands)

FY 1984 Estimate - \$615,000  
FY 1983 Estimate - \$448,700  
FY 1982 Estimate - \$316,500  
FY 1981 Actual - \$269,097

Of the \$448.7 million requested in FY 1983, \$124.3 million is for procurement of 120 MK-48 torpedoes, \$141.2 million is for procurement of 440 MK-46 NEARTIP torpedoes including \$35.5 million for advance procurement of long lead material associated with the FY 1984 NEARTIP torpedo procurement, \$151.4 million is for procurement of 500 CAPTOR mines, \$21.7 million is for underwater target procurements and \$10.1 million is for ASROC component replacement procurement.

Of the \$615.0 million requested in FY 1984, \$132.6 million is for the procurement of 144 MK-48 torpedoes, \$255.3 million is for the procurement of 1,200 MK-46 NEARTIP torpedoes including \$30.5 million for advance procurement of long lead material associated with the FY 1985 NEARTIP torpedo procurement, \$183.3 million is for procurement of 600 CAPTOR mines, \$21.5 million is for underwater target procurements and \$22.3 million is for ASROC component replacement procurement.

The following paragraphs provide justification for the FY 1983 and FY 1984 Torpedoes and Related Equipment. Initial spares and repair parts amounts are included for information purposes, but are separately justified in the Spares and Repair Parts category.

#### Torpedo MK-48

	(\$ in Thousands)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	120	124,300	144	132,600
Initial Spares		1,200		3,290
Procurement Cost		125,500		135,890

The Torpedo MK-48 was developed to replace the less capable MK-37 Torpedo in the Anti-Submarine role, and the MK-14 and MK-1 Torpedoes in the Anti-Ship role. FY 1983 and FY 1984 funds provide for the procurement of 120 and 144 MK-48 Mod 4 Torpedoes, respectively, and associated production and proofing support and also support efforts for MK-48 torpedoes procured in the prior years.

#### Torpedo MK-46 (NEARTIP)

	(\$ in Thousands)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	440	105,700	1200	224,800
Initial Spares		-		-
Procurement Cost		105,700		224,800

The Torpedo MK-46 is a lightweight ASW torpedo launched from surface ship torpedo tubes, ASROC launchers, fixed wing and rotary wing aircraft. The Torpedo MK-46 (NEARTIP) is an improved version of the MK-46 torpedo Mod 1 and features improved countermeasures resistance and an improved acoustic system that will enable the NEARTIP torpedo to attack submarines. FY 1983 and FY 1984 resources provide for continued procurement of the NEARTIP (Mod 5) version of the Torpedo MK-46, fleet support items, production support and proofing under a three-year multi-year procurement commencing in FY 1983. Long lead materials are being procured under the Torpedo MK-46 Advance Procurement line item.

#### Torpedo MK-46 (NEARTIP) Advance Procurement

	(\$ in Thousands)			
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement		35,500		30,500
Initial Spares		-		-
Procurement Cost		35,500		30,500

FY 1983 and FY 1984 funding provides for procurement of long lead material required to implement a three-year multiyear procurement program, FY 1983 through FY 1985, for the Torpedo MK-46 (NEARTIP). This multiyear procurement approach is expected to effect cost savings to the Navy of \$40.4 million over the three year period.

#### CAPTOR

(\$ in Thousands)					
		FY 1983			FY 1984
	Qty	Amt		Qty	Amt
Procurement	500	151,400		600	183,300
Initial Spares		8,200			10,233
Procurement Cost		159,600			193,533

CAPTOR (Encapsulated Torpedo) is a moored, influence activated ASW mine and employs an appropriately modified MK-46 torpedo as a payload. The CAPTOR system is deliverable by aircraft, surface ships and submarines on extremely short notice and is designed to detect, classify and attack the most advanced diesel and nuclear submarines. The FY 1983 and FY 1984 requests are for the continued procurement of CAPTOR weapons, fleet support items, production support, proofing, and also support efforts for CAPTOR units procured in prior years.

#### Mobile Target MK-30

(\$ in Thousands)					
		FY 1983			FY 1984
	Qty	Amt		Qty	Amt
Procurement	5	19,400		7	19,200
Initial Spares		1,300			3,140
Procurement Cost		20,700			22,340

The MK-30 Mobile Target provides air, surface and submarine ASW units with the means to conduct realistic ASW exercise firings on three-dimensional underwater ranges. This target provides the basic training capability to exercise surface ship and submarine sonars and torpedoes fired actively and passively, and aircraft equipped with sonobuoys and Magnetic Anomaly Detection (MAD) gear. The procurement of additional targets in FY 1983 and FY 1984 represents the continuing build up of assets to support achievement of 2,400 MK-30 in water runs per year at four fixed underwater sites.

Miniature Mobile Target MK-38

(\$ in Thousands)				
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement	1200	2,300	1200	2,300
Initial Spares		-		-
Procurement Cost		2,300		2,300

This target is a small, expendable, hand-launched acoustic device for use as an open ocean training aid for sonar teams. Its small size, low cost, ease of use and simplicity make it an excellent shipboard complement to the Mobile Target MK-38 which is confined to use on underwater ranges. The FY 1983 and FY 1984 requests provide for continued MK-38 Mini-Mobile Target production to support estimated fleet usage and associated production support and proofing efforts.

ASROC Component Replacement

(\$ in Thousands)				
	FY 1983		FY 1984	
	Qty	Amt	Qty	Amt
Procurement		10,100		22,300
Initial Spares		700		835
Procurement Cost		10,800		23,135

The ASROC (Anti-Submarine Rocket) is a weapon system designed around a range-controlled, unguided rocket missile which carries a torpedo or a depth charge as a payload. ASROC is utilized by most surface combatants to defend against high performance enemy submarines within a [ ] yard range. The FY 1983 and FY 1984 requests provide for procurement of ASROC components to replace those that were expended during fleet training exercises. The principal element of cost in FY 1983 is the procurement of additional rocket motors required to support fleet firings and in FY 1984 the continued procurement of rocket motor and Ignition Separation Assemblies (ISA). The ISAs are being procured in a new design which makes them safe from the hazards of accidental detonation caused by shipboard electromagnetic equipment (designated HERO: Hazards of Electromagnetic Radiation To Ordnance). Procurement of the HERO-safe MK-4 ISA is required in order to replenish inventories of the older non-HERO safe MK-3 ISAs depleted by training losses and will eventually replace the entire inventory of the older components.

Modification of Torpedoes and Related Equipment

(\$ in Thousands)  
FY 1984 Estimate - \$164,500  
FY 1983 Estimate - \$ 89,300  
FY 1982 Estimate - \$121,700  
FY 1981 Actual - \$ 27,250

The \$89.3 million in FY 1983 and the \$164.5 million in FY 1984 are requested to fund the following modification programs:

	<u>FY 1983</u>	<u>FY 1984</u>
MK-46 Torpedo Mods	28,400	4,100
MK-48 Torpedo Mods	35,600	125,100
MK-43 Mods Initial Spares (ADCAP)	( - )	(4,331)
Submarine Launched Mobile Mine (SLMM)	22,900	27,100
SLMM Initial Spares	(1,300)	(1,505)
CAPTOR Mods	2,400	8,200

Torpedo MK-46 Mods

\$28.4 million is requested in FY 1983 to complete procurement of MK-46 Torpedo Near Term Improvement (NEARTIP) kits and to continue procurement of MK-46 Torpedo CAPTOR modification kits. The FY 1984 request of \$4.1 million supports only the procurement of CAPTOR modification kits. NEARTIP kits are backfitted into existing MK-46 torpedoes and provide for improved countermeasures resistance and an improved acoustic system that will enable the NEARTIP Torpedo to attack submarines. CAPTOR kits are installed in existing MK-46 torpedoes to make them compatible with the CAPTOR Mine MK-60 weapon system.

Torpedo MK-48 Mods

\$35.6 million in FY 1983 and \$9.8 million in FY 1984 are requested to provide continued procurement of MK-48 Telecommunications improvement kits and MK-48 Mod 4 Homing Control Logic and Command Control Unit Ordalt Kits. The FY 1984 request also includes \$115.3 million to support the initial procurement of MK-48 Advanced Capability (ADCAP) Kits and associated Automatic Test Equipment and production support efforts.

#### Submarine Launched Mobile Mine (SLMM)

\$22.9 million in FY 1983 and \$27.1 million in FY 1984 are requested in order to procure the material for and support the modification of MK-57 Torpedoes to a SLMM configuration. Included within the funding requests are resources to support procurement of training mines and production support and proofing services.

#### CAPTOR Mods

\$2.4 million in FY 1983 and \$8.2 million in FY 1984 are requested in order to support procurement of modifications for MK-60 CAPTOR mines currently in the fleet. These modifications will update the mines to the latest approved production baseline configuration.

#### Support Equipment

(\$ in Thousands)  
FY 1984 Estimate - \$ 70,612  
FY 1983 Estimate - \$ 66,900  
FY 1982 Estimate - \$ 35,700  
FY 1981 Actual - \$ 31,142

Of the \$56.9 million requested in FY 1983, \$36.0 million is for Torpedo Support Equipment, \$17.8 million is for ASW Range Support, and \$13.1 million is for spares and repair parts.

Of the \$70.6 million requested in FY 1984 \$27.2 million is for Torpedo Support Equipment, \$19.5 million is for ASW Range Support, \$23.9 million is for spares and repair parts.

#### Torpedo Support Equipment

	(\$ in Thousands)	
	<u>FY 1983</u>	<u>FY 1984</u>
Procurement	\$36,000	\$27,200
Initial Spares	-	-
Procurement Cost	<u>\$36,000</u>	<u>\$27,200</u>

This line item provides the fleet with the components necessary to restore weapons used to conduct training exercises (which involves actually firing the torpedoes) back to a ready-for-issue warship status. Thus it supports combat-ready deployment of anti-submarine warfare forces. The funds requested provide for procurement of components expended during torpedo firings such as batteries, pressure cylinders, propellant assemblies and various air-launch accessories; equipment and components worn out or lost during repeated service such as exercise heads and fuel tanks; and production support efforts associated with the above procurements. Procurement quantities of these items vary each year and are dependent upon fleet training requirements and the tempo of operations. The FY 1983 and FY 1984 resources procure the material required to support fleet training exercises and operational inventories for the MK-46, MK-37 and MK-48 torpedoes.

ASW Range Support

	(\$ in Thousands)	
	FY 1983	FY 1984
Procurement	17,800	19,500
Initial Spares	400	578
Procurement Cost	18,200	20,078

The ASW Range Support Program provides for the procurement of range proofing and fleet support equipments required for use on the Navy's underwater ranges. This includes the procurement of pingers, transponders, MK-30 and MK-27 Target exercise components and other related items. This new line item supports Fleet exercises and torpedo firings and provides equipment for ASW readiness assessment.



Spares and Repair Parts

(\$ in Thousands)	
<u>FY 1983</u>	<u>FY 1984</u>
\$13,100	\$23,912

Funding provides for initial outfitting of spares and repair parts to support the ASW weapons and support equipment procured in this budget activity. Requirements for Navy initial spares procurement are determined by detailed provisioning procedures which take into account a number of factors, such as the use of the end-item, usage rate trends, engineering judgment and turn-around time for repairable items.

The following table shows a breakdown of initial spares incident to the weapon systems supported.

<u>Initial</u>	(\$ in Thousands)	
	<u>FY 1983</u>	<u>FY 1984</u>
MK-48 Torpedo	1,200	3,290
MK-3C Mobile Target	1,300	3,140
CARTOR	8,260	10,233
ASROC	700	835
SLMM	1,300	1,505
ASW Range Support	400	578
MK-46 Mods (ADCAP)	-	4,331
TOTAL INITIAL	\$13,100	\$23,912

Budget Activity 4: Other Weapons

(\$ In Thousands)  
FY 1984 Estimate - \$210,553  
FY 1983 Estimate - \$167,800  
FY 1982 Estimate - \$198,500  
FY 1981 Actual - \$193,667

Purpose and Scope of Work

These funds provide for the procurement of guns and gun mounts for U.S. Navy and Coast Guard Ships. This activity also provides for the associated gun spares & repair parts and modifications and support.

Justification of Funds

Of the \$167.8 million requested in FY 1983, \$130.6 million is for 39 Close-In Weapon Systems, 3 MK 75/76MM Gun Mounts, 14 MK 19 Mod 1 40MM Machine Guns, 6 25MM Gun Mounts, and 1,100 9MM Handguns. \$19.7 million is for gun and gun mount modification and \$17.5 million is for spares & repair parts and support equipment.

Of the \$210.6 million requested in FY 1984, \$160.9 million is for 42 Close-In Weapon Systems, 5 MK 75/76MM Gun Mounts, 25 MK 19 Mod 1 40MM Machine Guns, 7 25MM Gun Mounts, and 1,100 9MM Handguns. \$ 29.0 million is for gun and gun mount modification and \$20.7 million is for spares & repair parts and support equipment.

The following paragraphs provide justification for Other Weapons. Initial spare parts amounts are included for information under each weapon system, but are separately justified in the spares & repair parts category.

Guns and Gun Mounts

(\$ In Thousands)  
FY 1984 Estimate - \$160,900  
FY 1983 Estimate - \$130,640  
FY 1982 Estimate - \$139,637  
FY 1981 Actual - \$148,750

Of the \$130.6 million requested for Guns and Gun Mounts in FY 1983, \$118.7 million is for 39 MK 15 Close-In Weapon Systems, \$10.7 million is for 3 MK 75/76MM Gun Mounts, \$.4 million is for 14 MK 19 Mod 1 40 MM Machine Guns, \$.4 million is for 6 25MM Gun Mounts, and \$.4 million is for 1,100 9MM Handguns. Of the \$160.9 million requested for Guns and Gun Mounts in FY 1984, \$141.6 million is for 42 Close-In Weapon Systems, \$17.4 million is for 5 MK 75/76MM gun mounts, \$.9 million is for 25 MK19 Mod 1 40MM Machine Guns, \$.6 million is for 7 25MM Gun Mounts, and \$.4 million is for 1,100 9MM Handguns.

MK 15 Close-In Weapon System (PHALANX)

(\$ In Thousands)

	FY 1983		FY 1984	
	QTY	AMT	QTY	AMT
Procurement	39	\$118,740	42	\$141,600
Initial Spares	-	9,093	-	14,763
Procurement Cost	39	\$127,833	42	\$156,363

The PHALANX is designed as a fast reaction, last ditch defense against low flying aircraft, anti-ship missiles penetrating other Fleet defensive weapons envelopes. The system is an automatic self-contained unit consisting of a search and track radar, digitalized fire control system and a 20MM M61A1 gun all mounted in a single above deck structure requiring a minimum of interface with other ships systems. It automatically detects, evaluates, tracks, engages, assesses kill and returns to search mode. The system will be installed in over 300 ships, both new construction and retrofit. Commencing in FY 1982, improvements will be incorporated and will result in increased magazine capacity, increased search elevation and adaptive firing rate. The request represents funds for 39 systems in FY 1983 and 42 systems in FY 1984 for backfit onto Active Fleet ships.

MK 75/76mm Gun Mount

(\$ In Thousands)

	FY 1983		FY 1984	
	QTY	AMT	QTY	AMT
Procurement	3	\$10,700	5	\$17,400
Initial Spares	-	2,047	-	2,250
Procurement Cost	3	\$12,747	5	\$19,650

This gun is U.S. MELARA designed intermediate caliber, dual purpose, high rate of fire gun which is scheduled for installation in new construction hulls (Coast Guard cutters; Navy PHMs and FFGs).

This request provides for the procurement of three (3) gun mounts in FY 1983 and five (5) in FY 1984 to replace existing mounts as part of the Mid-Life Conversion of twelve (12) Hamilton Class cutters.

MK 19 49MM Machine Gun

(\$ in thousands)			
FY 1983		FY 1984	
QTY	AMT	QTY	AMT
14	\$400	25	\$5900

The MK 19 Mod 3 40MM Machine Gun program was initiated by the U.S. Navy to provide a more effective, safe and reliable 40MM grenade firing weapon for arming ships and crafts. The MK 19 Mod 3 is planned as an initial issue and replacement weapon for the Navy's present inventory of MK 19 Mod 1 40MM Machine Guns. One hundred nineteen (119) of these guns are required for initial issue and there also are one hundred sixteen (116) currently in use. This line migrated from Mods under \$900K.

25MM Gun Mount

(\$ in thousands)			
FY 1983		FY 1984	
QTY	AMT	QTY	AMT
6	\$400	7	\$600

This line provides for the procurement of 25MM Gun Mounts to replace MK 16 Mods 4/5 20MM Gun Mounts. It is being procured by the Army, is type C classified and uses standard US/NATO percussion primed family of ammunition. Three hundred eighty-three (383) gun mounts are required to fill the existing shipboard requirements. This line migrated from Mods under \$900K.

9MM Handgun

(\$ in thousands)			
FY 1983		FY 1984	
QTY	AMT	QTY	AMT
1,100	\$400	1,100	\$400

This line provides for the procurement of the 9MM pistol to replace the in-service caliber .38/.45 pistol, as directed by the Secretary of Defense. It is a design selected by an in-service study group and it will fire NATO Standard 9MM ammo.

Modification of Guns and Gun Mounts

(\$ In Thousands)

FY 1984 Estimate - \$29,000  
FY 1983 Estimate - \$19,700  
FY 1982 Estimate - \$20,600  
FY 1981 Estimate - \$20,300

Of the \$19.7 million requested for modification of guns and gun mounts in FY 1983, \$4.4 million is for MK 15 Close-In Weapon System modification, \$4.0 million is for 5"/54 Gun Mount modification, \$3.5 million is for 3"/50 Gun Mount modification, \$2.3 million is for MK 15/76MM Gun Mount modification, and \$5.5 million is for modifications under \$900,000.

Of the \$29.0 million requested for modification of guns and gun mounts in FY 1984, \$11.5 million is for MK 15 Close-In Weapon system modification, \$11.9 million is for 5"/54 Gun Mount modification, \$1.0 million is for 3"/50 Gun Mount Modification, \$4.0 million is for MK 15/76MM Gun Mount modification, and \$5.6 million is for modifications under \$900,000.

MK 15 Close-In Weapons System (PHALANX) Modification

(\$ In Thousands)

	FY 1983	FY 1984
Procurement	\$4,400	\$11,500

Commencing in FY 1983, \$4.4 million in FY 1983 and \$11.5 million in FY 1984 are requested for improvements to the Close-In Weapon System which will result in increased magazine capacity, increased search elevation angle and adaptive firing rate. Funds requested are to adapt previously procured units to incorporate these improvements. Systems being procured in FY 1983 and subsequent years will incorporate these improvements.

5"/54 Gun Mount Modification

(\$ In Thousands)

	FY 1983	FY 1984		
	QTY	AMT	QTY	AMT
Procurement	-	\$9,000	-	\$22,900
Initial Spares	-	\$3,120	-	\$3,140
Procurement Cost	-	\$12,120	-	\$15,040

Of the funds requested, \$3.2 million in FY 1983 and \$5.1 million in FY 1984 are required for the continuation of the 5"/54 production improvement program which provides hardware to correct safety deficiencies and improve operability, reliability, maintainability and system availability of all in-service 5"/54 Gun Mounts. \$5.8 million and \$6.3 million are also requested in FY 1983 and FY 1984 respectively for the Loader Select Modification. This modification to the 5"/54 Caliber Gun Mount MK 45 ammunition handling subsystem will provide a loader selection capability and new fuze function setting capability. In this configuration the gun system will have the capability for selecting/setting of a specific round from the ammunition loader drum containing a mix of various rounds. The selection/setting of rounds will be accomplished from the gun system control panels and/or Weapons Control Console.

3"/50 Gun Mount Modification

(\$ in Thousands)	
FY 1983	FY 1984
\$3,500	\$1,000

The \$3.5 million in FY 1983 and the \$1.0 million in FY 1984 are requested to procure major reliability, maintainability and availability improvements to in-service 3"/50 Gun Mounts. The improvements include procurement of the MK 2 Mod 13 Loader, MK 172 Mod 0 amplifier and various other 3"/50 Gun Mount modifications. Prior to FY 1981, these modifications were funded in the Modifications Under \$900,000 line due to the lesser magnitude of the program.

MK 75/76MM Gun Mount Modifications

(\$ in Thousands)	
FY 1983	FY 1984
\$2,300	\$4,000

The \$2.3 million in FY 1983 and \$4.0 million in FY 1984 are requested to procure safety, operability, reliability, shock, vibration and survivability modifications to correct in-service MK 75/76MM Gun Mount deficiencies. Prior to FY 1982, these modifications were funded in the Modifications Under \$900,000 line due to the lesser magnitude of the program.

Modifications Under \$900,000

(\$ in Thousands)	
FY 1983	FY 1984
\$500	\$600

The \$.5 million in FY 1983 and the \$.6 million in FY 1984 are requested to procure a variety of ordnance alteration materials for in-service 5"/38 Gun Mount and minor caliber ordnance.

Support Equipment

(\$ in Thousands)	
FY 1984 Estimate -	\$20,653
FY 1983 Estimate -	\$17,400
FY 1982 Estimate -	\$35,256
FY 1981 Estimate -	\$24,617

Of the \$17.5 million requested for support equipment in FY 1983, \$.4 million is for Gun Support Equipment and \$17.1 million is for Spares & Repair Parts.

Of the \$20.7 million requested for support equipment in FY 1984, \$.5 million is for Gun Support Equipment and \$20.2 million is for Spares & Repair Parts.

# Gun Support Equipment

(\$ In Thousands)	
FY 1983	FY 1984
\$400	\$500

The \$0.4 million in FY 1983 and \$0.5 million in FY 1984 are requested to procure a variety of ordnance in support of Surface Gun Systems. The categories of items being procured are training aids, small arms and minor caliber ordnance.

# Spares and Repair Parts

(\$ In Thousands)	
FY 1983	FY 1984
\$17,060	\$20,153

The \$14.3 million in FY 1983 and \$20.2 million in FY 1984 are requested to procure initial spares in support of Navy surface ordnance consisting of all guns, associated equipment (hoists, shields, etc.), and related support material. The \$2.8 million in FY 1983 for replenishment spares is for spare parts consumed by the Fleet.

Requirements for Navy initial spares support are determined by detailed provisioning procedures which take into account a number of factors such as the use of the end-item, usage rate trends, engineering judgement and turnaround time for repairable items. Replenishment spare parts requirements are determined through a stratification process which considers the number of guns in the Fleet, the spare parts usage, RFI (Ready for Issue) spares returning from rework and repair programs, and equipment lead-time to derive net fiscal year budget requirements.

	(\$ In Thousands)	
	FY 1983	FY 1984
Initial	\$14,260	\$20,153
Replenishment	2,800	-
	\$17,060	\$20,153

The following table shows a breakdown of funds requested for initial and 2J cog spare parts by the gun systems supported:

Initial Spares	(\$ In Thousands)	
	FY 1983	FY 1984
Close-In Weapon System	\$9,095	\$14,763
MK 75/76mm 62 Gun Mount	439	750
2J Cog Spares -MK 75/76mm 62	1,608	1,500
2J Cog Spares -5"/54 MK 45 M1	1,938	1,690
2J Cog Spares -5"/54 MK 42	1,182	1,450
2-47 TOTAL	\$14,260	\$20,153

Comparison of FY 1982 Program Requirements as Reflected  
In FY 1982 Budget With FY 1982 Program Requirements as  
Shown in FY 1983 Budget

Summary of Requirements (In Thousands of Dollars)

	Total Program Requirements <u>Per FY 1982 Amended Budget</u>	Program Requirements <u>Per FY 1983 Budget</u>	Increase (+) or Decrease (-)
Ballistic Missiles	958,900	955,000	-3,900
Other Missiles	1,611,100	1,590,700	-20,400
Torpedoes and Related Equipment	516,600	473,900	-42,700
Other Weapons	200,200	195,500	-4,700
General Reduction/Adjustments	-3,000	-0-	+3,000
Reimbursable Program	<u>3,000</u>	<u>5,024</u>	<u>-2,024</u>
TOTAL Fiscal Year Program	\$3,286,800	\$3,229,124	-56,676

Explanation by Budget Activity

1. Ballistic Missiles (\$-3.9 Million)

The decrease results from the application of \$1.2M of the general Congressional reductions to Ballistic Missiles and minor reprogramming actions totaling \$-2.7 million.



2. Other Missiles (\$-20.4 Million)

The decrease reflects Congressional reductions totaling \$36.0M for the following: \$-18.0M deleting the total HARPOON Advance Procurement request; \$-10.0M to the SPARROW Missile request resulting in a reduction of 60 missiles; \$-5.2M to the PHOENIX Advance Procurement request; and \$2.8M in general reductions. Minor reprogrammings totaling \$15.6M provide for increases to other programs.

3. Torpedoes and Related Equipment (\$-42.7 Million)

The decrease reflects Congressional reductions of \$39.2M for the following: \$-13.0M to the MK-48 torpedoes request; \$-7.4M to the MK-46 torpedo request; \$-17.9M to the MK-46 Torpedo Modification Program and \$-.9M in general reductions. Minor reprogrammings totaling \$-3.5M provide for additional decreases.

4. Other Weapons (\$-4.7 Million)

The decrease reflects minor reprogrammings totaling \$-4.4M and Congressional general reductions totaling \$-.3M.

5. Reimbursable Program (\$+2.0 Million)

The increase reflects additional anticipated reimbursable orders.

Comparison of FY 1982 Financing As Reflected  
In FY 1982 Budget With FY 1982 Financing As  
Shown in FY 1983 Budget

	<u>Financing Per FY 1982 Budget</u>	<u>Financing Per FY 1983 Budget</u>	<u>Increase (+) or Decrease (-)</u>
Program Requirements (Total)	3,286,800	3,220,124	-66,676
Program Requirements (Service account)	3,283,800	3,215,100	-68,700
Program Requirements (Reimbursable)	3,000	5,024	+2,024
Less:			
Anticipated Reimbursements	3,000	5,024	+2,024
Reprogramming from prior year budget plans	-	-	-
Unobligated balance available from prior year to finance new budget plans (Reappropriation)	-	-	-
Transferred from other accounts	-	8,000	+8,000
Add:			
Unobligated balance available to finance subsequent year budget plans	-	-	-
Transferred to Other Accounts	-	-	-
Appropriation (Adjusted)	3,283,800	3,207,100	-76,700

Explanation of Changes in Financing

The entire decrease of \$76.7M to the FY 1982 Appropriation resulted from reductions by Congress in the FY 1982 Appropriation request. The \$68.7M decrease to program requirements (service account) is due to Congressional reductions of \$76.7M offset by a reprogramming totaling \$8.0 transferred from another account. The adjustment for reimbursables reflects an anticipated \$2.0M increase in reimbursable orders.

Comparison of FY 1981 Program Requirements as Reflected  
In FY 1982 Budget With FY 1981 Program Requirements As  
Shown in FY 1983 Budget

Summary of Requirements (In Thousands of Dollars)

	Total Program Requirements Per FY 1982 Amended Budget	Program Requirements Per FY 1983 Budget	Increase (+) or Decrease (-)
Ballistic Missiles	884,203	875,903	-8,300
Other Missiles	1,333,303	1,341,073	+7,770
Tornedoes and Related Equipment	325,559	327,489	+1,930
Other Weapons	195,067	193,667	-1,400
Reimbursable Program	<u>5,000</u>	<u>7,440</u>	<u>+2,440</u>
TOTAL Fiscal Year Program	\$2,743,132	\$2,745,572	+2,440

Explanation by Budget Activity

1. Ballistic Missiles (\$-8.3 Million)

The decrease is due to the FY 1981 Supplemental Appropriation which effected escalation reductions.

2. Other Missiles (\$+7.8 Million)

The overall increase is due to the FY 1981 Supplemental Appropriation which increased the HARM program b, \$24.0M and effected escalation reductions totaling \$11.4M. Minor reprogrammings totaling \$-4.8M provide for additional decreases.

3. Torpedoes and Related Equipment (\$+1.9 Million)

The increase is due to minor reprogrammings totaling \$+4.6M offset by \$2.7M in escalation reductions effected by the FY 1981 Supplemental Appropriation.

4. Other Weapons (\$-1.4 Million)

The decrease is due to an escalation reduction of \$1.6M effected by the FY 1981 Supplemental Appropriation offset by minor reprogrammings totaling \$+.2M.

5. Reimbursable Program (\$+2.4 Million)

The increase is due to anticipated receipt of more reimbursable orders than previously anticipated.

Comparison of FY 1981 Financing As Reflected  
In FY 1982 Budget With FY 1981 Financing As  
Shown in FY 1983 Budget

	Financing Per FY 1982 Budget	Financing Per FY 1983 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	2,743,132	2,745,572	+2,440
Program Requirements (Service account)	2,738,132	2,738,132	-0-
Program Requirements (Reimbursable)	5,000	7,440	+2,440
Less:			
Anticipated Reimbursements	5,000	7,440	+2,440
Reprogramming from prior year budget plans	-	-	-
Unobligated balance available from prior year to finance new budget plans (Reappropriation)	-	-	-
Transferred from other accounts	-	-	-
Add:			
Unobligated balance available to finance subsequent year budget plans	-	-	-
Transferred to Other Accounts	-	-	-
	27,897	27,897	-0-
Appropriation	2,766,029	2,766,029	-0-

Explanation of Changes in Financing

The \$2.4M increase to program requirements is due to the receipt of more reimbursable orders than anticipated. The Appropriation remains constant.

Analysis of Unobligated Balances - FY 1983 Program  
Summary by Activity

	<u>Estimated Dollars (Thousands)</u>	<u>Unobligated % of Total Unobligated</u>
1. Ballistic Missiles	\$ 88,147	8.1%
2. Other Missiles	87,632	75.1%
3. Torpedoes and Related Equipment	159,060	14.6%
4. Other Weapons	<u>24,009</u>	<u>2.2%</u>
SUBTOTAL Direct Program	1,088,848	100.0
5. Reimbursable Program	<u>5,000</u>	
TOTAL Unobligated FY 1982	\$1,093,848	

Explanation by Activity

It is anticipated that approximately 89% of the FY 1982 Ballistic Missiles request will be obligated in the first year of availability based upon an FY 1982 estimate of 81% and an FY 1981 actual of 84% obligated in the first year of availability. The unobligated balances remaining at the end of the first year result from a number of factors, including the fact that final assembly of TRIDENT missiles does not take place until the fourth year thereby delaying the obligation of funds associated with missile assembly. Other reasons for first year unobligated balances is that some funds are reserved for engineering changes, abnormal inflation, and final contract pricing including incentive payments and other contract cost adjustments. In addition, funds remaining at the end of the first year are required for shorter leadtime Fleet Support type items, such as training requirements, and the procurement of handling, test and checkout equipment. Much of the unobligated balance is required to conform to the full funding policy required in procurement appropriations.

2. Other Missiles (\$817.6 Million)

It is anticipated that approximately 65% of the FY 1983 Other Missiles request will be obligated in the first year of availability based upon an FY 1982 estimate of 67% and an FY 1981 actual of 61% obligated in the first year of availability. Carry over balances at the end of the first year represent funds required for assembly of complete missile rounds delivered in subsequent years, procurement of Fleet support type equipment, and funds reserved for production engineering, proof and testing of missiles in production, and final pricing of contracts including incentive payments and other contract cost adjustments. In addition, unobligated balances represent funds required for procurement of short leadtime modification kits, special kits, special test equipment and other items such as production testing, technical data and publications. Some initial spares are procured on the same contract as the installed missile equipments which they support; since some of these equipment contracts are not awarded until late in the first year, the associated spare parts orders may be carried over to the second or third year. Also initial outfitting and replenishment support may not be firmly definitized as to price and quantity by the end of the first year. Negotiations of firm prices for these orders placed in the first year caused obligations and adjustments in subsequent years, and funds must be held for these contingencies. Unobligated balance for industrial facilities represent funds reserved for machine tools orders which could not be definitized in the first year of fund availability. Unforeseen trouble, such as pricing disputes or personnel shortages in the contracting office, will often prolong negotiations and delay obligations. Much of the unobligated balance is required to conform to the full funding policy required in procurement appropriations.

3. Torpedoes and Related Equipment (\$159.1 Million)

It is anticipated that approximately 74% of the FY 1983 Torpedoes and Related Equipment request will be obligated in the first year of availability based upon an FY 1982 estimate of 73% and an FY 1981 actual of 67% obligated in the first year of availability. The balance of these funds are set aside for engineering changes to correct specification errors and enhance system reliability and performance until the second or third year of availability; for spares and repair parts procurement, which are based on the same specification as the end item defined late in the fiscal year and which are not obligated until the second year of availability; for contract "Target to Ceiling" determination if deemed to be required will result in a certain amount of money being held until the contract is closed; for assembly and proofing of torpedoes and mines in subsequent years; and finally for unexpected problems which may disrupt the program's progression toward contract definitization. Much of the unobligated balance is required to conform to the full funding policy required in procurement appropriations.

4. Other Weapons (\$24.0 Million)

It is anticipated that approximately 86% of the FY 1983 Other Weapons request will be obligated in the first year based upon and FY 1982 estimate of 65% and an FY 1981 actual of 56% obligated in the first year of availability. Some funds remain unobligated for engineering and design changes or because of difficulties in contract negotiations and stretched-out administrative leadtime resulting in program slippage. Spares and repair parts support may not be sufficiently definitized to allow for obligation in the first year if equipment contracts are obligated late in the fiscal year. In addition, final pricing of contracts including incentive payments and other contract adjustments require that certain contingencies are held. Much of the unobligated balance is required to conform to the full funding policy for procurement appropriations.

5. Reimbursable Programs (\$5.0 Million)

Reimbursable programs represent orders from other government activities and foreign governments for material and services. The unobligated balance remaining in this program at the end of the first year are due to factors similar to those that affect other programs in this appropriation and is further complicated by reimbursable collection procedures. In the event that items require replacement-in-kind, it is first necessary to receive a collection for the sale of the item and then request replacement-in-kind authority from higher Commands. Such authority is not normally granted until late in the fiscal year, or in the second year of availability; therefore obligations for the procurement of replacement items usually occur during the second year of availability. Collections received from the sale of items to foreign countries which do not require replacement-in-kind are credited to the miscellaneous receipts account of the U.S. Treasury.



Table of Contents  
Missile Modification

<u>Missile</u>	<u>Modification</u>	<u>Page No.</u>
UGM-73A POSEIDON	C-3 TVC Gas Generator	2-59
	Alternative MK-3 Body Nose Cap Exchange	2-60
	C-3 Second Stage Motor Dome Seal	2-61
	C-3 First and Second Stage Motor Nozzle	2-62
AIM-7E/F SPARROW III AIM/RIM-7M	AIM-7E-2 to RIM-7H-5 Conversion (Rapid-Run-Up)	2-63
	Wing Follow-up Potentionmeter	2-64
	MK-58 Rocket Motor Safe and Arm	2-65
	Product Optimization Program	2-66
	Rocket Motor/Warhead Cookoff Protection	2-67
	Titanium Wing Replacement	2-68
	Product Improvement Program	2-69
AIM-9 SIDEWINDER	MK-36 Rocket Motor Safe-Arm Handle	2-70
	AIM-9H Capability Improvement	2-71
	AIM-9H/L Obsolescence	2-72
AIM-54 PHOENIX	AIM-54A Missile Retrofit	2-73
	DSM-130 Reliability Improvements	2-74
	DSM-130 Operational Improvements	2-75
	DSM-130 Operational/Life Improvements	2-76
	DSM-130 ECCM/Sealed Test Capability	2-77
	Guidance/Control Section Test Station Sealed Test Capability	2-78
	Guidance/Control Section Station AIM-54C Capability	2-79
	Guidance/Control Section Station Operational Improvements	2-80
	Guidance/Control Section Station Reliability Improvements	2-81
	AIM-54A Coldwall Retrofit	2-82

<u>Missile</u>	<u>Modification</u>	<u>Page No.</u>
	Depot Test Sets AIM-54C Capability	2-83
	Depot Test Sets Reliability Improvements	2-84
	Depot Test Sets Operational Improvements	2-85
	Fuze Operational Effectiveness	2-86
	Depot Test Sets Operational Life Improvements	2-87
	Guidance Section Container Shock Mounts	2-88
	All Up Round Container Saddle Assembly	2-89
	AIM-54A Target Detector Device Sensitivity	2-90
	Missile, Inrush Current Limiter	2-91
	All Up Round Container Stacking Post	2-92
AGM-84A/RGM-84A/ UGM-84A HARPOON	Upgrade Guidance Section	2-93
	Canister Drain Re-design	2-94
	Block 1C Mod	2-95
	Sustainer Extended Range	2-96
	Increase Mounting Spring Force	2-97
	Seeker Improved Guidance	2-98
	Turbojet Engine Combuster	2-99
	Crush Probe Sensors	2-100
	MK 44 Mod 1 Fuze Boost Phase (Warhead)	2-101
	Eliminate Tartar Booster Wiring in ASROC and CAPSULE/ Canister Booster	2-102
	Replace Capsule Fin Blades	2-103
	Capsule Third Guide Lug	2-104
	Turbojet Engine Leakage	2-105
	Canister Enclosure Installation Improvements	2-106
	Block 1B Mod	2-107
RIM-66B STANDARD MR	MK-56 Rocket Motor Regraining	2-108
RIM-67/A STANDARD ER	MK-12 Booster Modification	2-109
	ECP 1967-1 (Improve Performance)	2-110
	MK-7 Sustainers to MK-30s	2-111

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: POSEIDON UGM-73A (C-3)

Missile/Modification Type: C-3 TVC Gas Generator

Description/Justification: The current C-3 TVC Gas Generators are tested in an annual SLE (Service Life Evaluation Program.) The past years of deployed TVC Gas Generators has produced a degradation of the propellant. This modification will provide new TVC Gas Generators.

Scope of Program:

(\$ in 000s)

<u>Prior Years</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Total Program</u>	
<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
162	\$3,764	68	\$1,700	211	\$5,749	205	\$5,877	646	\$17,030

Basis for Cost Estimate: Cost based on past experience and vendor experience and vendor estimates.

Method of Implementation: Incorporation of this SPALT will be accomplished at POMFLANT.

Installation Schedule: SPALT to be installed IAW POMFLANT Schedule.

### Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: Poseidon JGM-73A (C-3)

Missile/Modification Type: Alternate MK-3 Body Nose Cap Exchange

Description/Justification: The MK-3 reentry body Nose Cap has been redesigned to increase tactical mission reliability. This redesign, incorporating the use of state-of-the-art technology and new materials, will minimize the number of deployed hardware which have a low probability of survival under certain tactical reentry conditions.

Development Status: Development is complete. All test flights to date have been successful.

#### Scope of Program:

(\$ in 000s)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>Total Program</u>	
<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
2,122	\$8,622	612	\$4,351	225	\$1,623	690	\$5,029	3,649	\$19,625

Basis for Cost Estimate: Material costs based upon past procurements by Union Carbide Corp. Labor is based on prior costs and experience gained in fabrication of the previous MK-2 Nose Caps.

Method of Implementation: Factory level replacement of MK-3 R/B ATJS nose caps with alternate CIT nose caps is being accomplished at LMSC Sunnyvale.

Installation Schedule: The alternate MK-3 Nose Caps will be installed concurrent with the Limited Life Component Exchange (LLCE) schedules.

### MISSILE MODIFICATION

Appropriation: Weapons Procurement, Navy

Missile Type: POSTIDON

Missile Modification Title: C3 Second Stage Motor Dome Seal

#### Description/Justification:

Engineering studies have shown that loss of volatiles (moisturizers) plus thermal aging will degrade motor insulator properties resulting in reduced motor reliability. This SPALT will correct the problem in two ways: (1), for those motors that have already suffered some loss of volatiles, a moisture cover will be added which will correct that situation by recovering the loss and (2), a seal will be added to all motors to prevent future rapid loss of volatiles.

#### Scope of Program:

(\$900)

<u>Prior Years</u>		<u>FY 1981</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
30	\$2,500	395	\$6,300	-0-	-0-	425	\$8,800

#### Basis for Cost Estimate:

Contracted Amount.

#### Method of Implementation:

Installation of covers and seals at POMFLANT during normal missile refurbishment or repair.

#### Installation Schedule:

SPALT to be installed per POMFLANT schedule.

MISSILE MODIFICATION

Appropriation: Weapons Procurement, Navy

Missile Type: POSCIDON

Missile Modification Title: C3 FIRST AND SECOND STAGE MOTOR NOZZLE

Description/Justification:

This SPALT provides for corrective action on bondline gaps/separations detected on tactical first and second stage nozzles and for an additional exit liner retention mechanism for the first stage nozzle. This will maintain the reliability of the nozzle by correcting a potential failure mode.

Scope of Program:

<u>Prior Years</u>		<u>FY 1984</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
FS 0	0	46	\$5,971	362	\$37,810	408	\$42,881
SS 0	0	0	0	380	\$42,890	380	\$42,890

Basis for Cost Estimate:

Engineering Estimate

Method of Implementation:

Return to vendor

Installation Schedule:

FY 84/88

Missile Modification

Appropriation: Weapons Procurement, Navy

3

Missile Type: AIM-7E-2/3 SPARROW III

Missile Modification Title: Rapid-Run-Up with reliability and fuze improvements, clipped fins, and folding wings.

Description/Justification: The Rapid-Run-Up modification, coupled to a special launcher power supply, enables the missile to be powered, tuned and ready to launch in six seconds. Deployed ready service life will be greatly extended. (Previous models required continuous power on, causing high failure rates).

Development Status: Complete

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
755	\$2,776	43	\$267	204	\$1,500	-	-	1000	\$4,543

Basis of Cost Estimate: Contractor estimate: \$6,000/kit.

Method of Implementation: Installation at Naval Air Rework Facility Alameda.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-7E SPARROW III

Missile Modification Title: Wing Follow-Up Potentiometer

Description/Justification: The improved wing follow-up potentiometer will greatly reduce failure rates and aligns the gear and pot assemblies of all 7E series missiles and accomplishes standardization with the AIM-7F.

Development Status: Complete

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
582	\$76	484	\$73	384	\$61	-	-	1450	\$210

Basis of Cost Estimate. \$131 kit cost/missile (FY-80).

Method of Implementation: Naval Air Rework Facility Alameda during normal rework.



Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-7F SPARROW III

Missile Modification Title: MK-58 Rocket Motor Arming - Firing Relock Assembly Retrofit

Description/Justification: Early MK-58 rocket motor's S&A devices can return to safe position after being armed. This retrofit eliminates the above potential plus reduces handling and foreign object damage.

Development Status: Complete

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
2060	\$324	-	-	-	-	-	-	2060	\$324

Basis of Cost Estimate: Naval Weapon Center China Lake ECP-4044, AWC 187.

Method of Implementation: By Naval Weapon Station.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-7F SPARROW II

Missile Modification Title: Product Optimization Program

Description/Justification: This program consists of the following fixes:  
a. Foresight error arming  
b. KTD switching MOD  
c. Mutual interference fix  
d. Narrow band jammer  
e. Auto-pilot separation

Development Status: Complete

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
595	*\$9,500	400	\$700	516	**\$4,290	256	\$1,003	1767	\$15,493

Basis of Cost Estimate: Kit price based upon contractor's proposal.

Method of Implementation: To be installed at contractor facilities.

\*Includes FY 1980 Raytheon start up cost  
\*\*Includes FY 1983 General Dynamics start up cost

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-7F SPARROW III

Missile Modification Title: Rocket Motor/Warhead Cookoff Protection

Description/Justification: Retrofit increases the resistance of the AIM-7F Warhead and Rocket Motor to detonation in fire.

Development Status: Under development (due March 1982)

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	173	\$260	875	\$1,314	719	\$1,259	1767	2,833

Basis of Cost Estimate: PMTC engineering: Material \$1,500/kit (FY-81).

Method of Implementation: At Naval Weapons Stations using wrap around blanket and RM spray.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-7F SPARROW III

Missile Modification Title: Titanium Wing Replacement

Description/Justification: The built-up steel wings on the AIM-7F require replacement because an undesirable roll instability inherent in the SPARROW missile design is magnified by the natural frequency response characteristics of the wing. The Titanium replacement wings will correct this.

Development Status: Complete

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
618	\$2,347	-	-	-	-	-	-	618	\$2,347

Basis of Cost Estimate: Contractor proposal.

Method of Implementation: At Weapons Stations/shore and fleet locations as required for use.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM/RIM-7M SPARROW III

Missile Modification Title: Product Improvement Program

Description/Justification: Program will incorporate computer program correcting deficiencies found in TECHEVAL/IOT&E into FY-80/81 production missiles.

Development Status: Under development

Scope of Program: (Dollars in Thousands) .

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	385	\$525	290	\$1,737	675	\$2,262

Basis of Cost Estimate: Current product improvement costs.

Method of Implementation: At contractor facilities.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-9 SIDEWINDER

Missile Modification Title: MK-36 Rocket Motor Safe-Arm Selector Handle

Description/Justification: The current MK-36 rocket motor safe-arm assembly, although acceptable, requires some improvements for more efficient operation. The current device requires removal and insertion of an arming key by ordnance personnel for arming and safing operations. The new device would incorporate a permanently installed arming key eliminating the need to carry or store arming keys. A potential item for foreign object damage to aircraft engines would also be eliminated. The new device would reduce internal friction improving automatic return to safe action.

Development Status: Design Phase

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	1790	\$300.0	-	-	1790	\$300.0

Basis for Cost Estimate: Kit cost is \$167.

Method of Implementation: Installation will take place at Naval Weapons Stations.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-9 SIDEWINDER

Missile Modification Title: AIM-9H Capability Improvement

Description/Justification: The AIM-9H capability is degraded under specific aircraft engagement scenarios. This can be considerably improved by using the DSU-15/B Active Optical Target Detector (AOTD) Fuze and the WDU-17/B Warhead developed for the AIM-9L. These components are direct replacements for the MK-15 Fuze and MK-48 Warhead presently used on the AIM-9H. The DSU-15A/B, compatible with the AIM-9L and AIM-9M, will be procured since it is less expensive to produce. The DSU-15/B inventory fuzes would be used on the AIM-9H.

Development Status: Not applicable

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	\$9,800	-	\$9,450	-	-	-	\$19,250

Basis for Cost Estimate: The \$9,800K includes the procurement of: 1200 DSU-15A/B AOTD's \$8,475K  
500 WDU-17/B Warheads 1,325K  
\$9,800K

Method of Implementation: Components will be procured with the Navy/Air Force/FMS AOTD and Warhead FY 1982 and FY 1983 procurements. These components will be mated with the AIM-9H guidance sections as they are returned from the Fleet during a normal rework cycle.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: AIM-9 SIDEWINDER

Missile Modification Title: AIM-9H/L Obsolescence

Description/Justification: The AIM-9M is the latest version of the SIDEWINDER missile. The AIM-9M retains all demonstrated performance of the AIM-9L and, in addition, provides an improved infrared counter-countermeasures (IRCCM) and target versus background discrimination capabilities. The AIM-9 has emerged as the least cost, most effective missile system to meet the expanded threat identified for the mid 1980's. To enhance SIDEWINDER inventory capability, current plans are to remove the AIM-9H and AIM-9L guidance sections from inventory by the end of FY 1985 and FY 1986 respectively. The SIDEWINDER missile is procured as seven separate components which are assembled into an all up round missile at Naval Weapons Stations. The AIM-9L and AIM-9M guidance sections are interchangeable with all other components. The AIM-9H obsolescence will require procurement of the AIM-9M guidance sections, sets of fins and safe-arming devices. The AIM-9L obsolescence will require only the AIM-9M guidance sections.

Development Status: Not applicable

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	250	\$10,700	1090	\$36,450	3130	\$96,300	4380	\$143,450

Basis for Cost Estimate: AIM-9L procurement History and AIM-9M prototype units.

Method of Implementation: Assembly at Naval Weapons Stations.



Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: AIM-54A Missile Retrofit

Description/Justification: Retrofit AIM-54A to AIM-54C configuration including Digital Electronic Units, Inertial Sensor Assembly, and Improved Target Detection Device and Solid State Transmitter.

Development Status: Engineering Development

Scope of Program: (Dollars In Thousands)

<u>Prigr Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	\$1,200	5	\$1,997	243	\$151,097	246	\$164,234

Bas is of Cost Estimate:

- (1) Non-Recurring Cost : FY-82 = \$1,200,000.
- (2) Recurring Cost per missile (average) = \$665,666

Method of Implementation: Installation at Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: DSM-130 Reliability Improvements

Description/Justification: Improve reliability of DSM-130 by replacing circuit cards in the Signal Monitor and Distribution Panel with cards having gold plated contacts and replacing marginal components with Hi-Rel components.

Development Status: Engineering Development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	9	\$2,167	-	-	9	\$2,167

Basis for Cost Estimate:

- (1) Non-Recurring Cost = \$542,000
- (2) Recurring Cost per Test Set = \$180,600

Method of Implementation: Installation at Naval Weapons Station, HAC and PMTC by contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: DSM-130 Operational Improvements

Description/Justification: Improve test capability and performance of DSM-130 by reducing noise intermittence and false aborts through additional filtering, relocation of units and modified circuitry.

Development Status: Engineering Development

Scope Of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	9	\$3,581	-	-	-	-	9	\$3,581

Basis Of Cost Estimate:

- (1) Non-Recurring Cost = \$1,700,000
- (2) Recurring Cost per Test Set = \$209,000

Method of Implementation: Installation to be performed at Naval Weapons Station, HAC and PMTC by Contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: DSM-130 Operational/Life Improvements

Description/Justification: Extend the operational life of the DSM-130 by replacing dependent parts with potential for failure and replacing components and units which cannot be supported. Development of modification to occur in FY-82 through FY-84 with procurements/production beginning in FY-83 and completed by FY-85. Installation to be phased over two years in both range and depth of all nine test sets.

Development Status: Engineering Development

Scope of Program: (Dollars in Thousands)

<u>Pror Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	9	\$3,495	9	\$3,495

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$1,631,000
- (2) Recurring Cost per Test Set = \$207,100

Method of Implementation: Installation at Naval Weapons Station, HAC and PMTC by the contractor.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: DSM-130 ECCM/Sealed Test Capability

Description/Justification: To incorporate in the DSM-130 the capability of testing the AIM-54C ECCM/Sealed Missiles.

Development Status: Engineering Development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	9	5,825	9	\$5,825

Basis for Cost Estimate:

- (1) Non-Recurring Cost = \$582,500
- (2) Recurring Cost per Test Set = \$582,500

Method of Implementation: Installation at Naval Weapons Station by contractor.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: GCSTS ECCM/Sealed Test Capability

Description/Justification: To incorporate a G/CSTS the capability of testing AIM-54C ECCM/Sealed Missiles.

Development Status: Engineering Development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	2	\$1,747	2	\$1,747

Basis for Cost Estimate:

- (1) Non-Recurring Cost = \$582,000
- (2) Recurring Cost per Test Set = \$582,000

Method of Implementation: Installation at Depot by contractor.

Missile modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: G/CSTS (Guidance/Control Section Test Station) AIM-54C Capability

Description/Justification: Mod G/CSTS to provide AIM-54C Test Capability consisting of extensive hardware and software modifications.

Development Status: Engineering Development (ECP Approval Jan 1982).

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
2	\$7,909	-	-	-	-	-	-	2	\$7,909

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$3,400,000
- (2) Recurring Cost per Test Set = \$2,254,000

Method of Implementation: Installation to be performed at Depot by Contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: G/CSTS (Guidance/Control Section Test Station) Operational Improvements

Description/Justification: Mod G/CSTS to improve maintenance and alignment through software mods and test capability. and improve fault isolation capability by detecting and isolating failures to replaceable assemblies.

Development Status: Engineering Development (ECP Approval June 1983).

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	2	\$1,035	-	-	2	\$1,035

Basis Of Cost Estimate:

- (1) Non-Recurring Cost = \$355,000
- (2) Recurring Cost per test set = \$340,000

Method of Implementation: Installation at Depot by Contractor.



Missile Modification

Appropriation: Weapons Procurement, Navv

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: G/CSTS (Guidance/Control Section Test Station) Reliability Improvements

Description/Justification: Improve reliability of G/CSTS by replacing circuit cards in Signal Monitor and Distribution Panel with cards having gold plated contacts and replacing marginal components with Hi-Rel components.

Development Status: Engineering Development

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	2	\$1,281	2	\$1,281

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$466,000
- (2) Recurring Cost per test set = \$408,000

Method of Implementation: Installation at Depot by the Contractor.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54A

Missile Modification Title: AIM-54A Coldwall Retrofit

Description/Justification: Retrofit existing epoxy sealed AIM-54A coldwalls with brazed coldwalls to eliminate coolant saturation problem.

Development Status: Under Development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	66	\$ 239	1141	\$4,223	1207	\$4,462

Basis for Cost Estimate: (FY-83): Recurring Cost \$3.6 Avg.

Method of Implementation: Kit procurement from Hughes Aircraft Co.,-to be installed by NARF during normal rework cycle.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: Depot T.S. AIM-54C Capability

Description/Justification: Mod NARF test sets to provide AIM-54C test capability including Unit/Assembly Test Station, Flexible Automatic Circuit Tester and Rate Sensor Test Station.

Development Status: Engineering Development (ECP in review).

Scope of Program: (Dollars In Thousands)

<u>Pror Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	1	\$2,250	-	-	-	-	1	\$2,250

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$1,100,000
- (2) Recurring Cost per Test Set = \$1,150,000

Method of Implementation: Installation at Depot by Contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: Depot T.S. Reliability Improvements

Description/Justification: Improve reliability of the Unit/Assembly Test Station (UATS) and the fault isolation capability of the Remote Program Simulator Test Set. Replace marginal components with Hi-Rel components.

Development Status: Engineering Development

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	1	\$721	-	-	1	\$721

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$239,000
- (2) Recurring Cost per Test Set = \$482,000

Method of Implementation: Installation at Depot by Contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: Depot T.S. Operational Improvements

Description/Justification: Modify RARF test sets to improve performance and test capability including Unit/Assembly Test Station, Flexible Automatic Circuit Tester and Rate Sensor Test Station.

Development Status: Engineering Development (ECP Approval May 1982).

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	1	\$705	-	-	-	-	1	\$705

Basis of Cost estimate:

- (1) Non-Recurring Cost = \$300,000
- (2) Recurring Cost per Test Set = \$405,000

Method of Implementation: Installation at Depot by the Contractor.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54A

Missile Modification Title: Fuze MK-11 MOD 3 EA, Operational Effectiveness (ECP-0273-9)

Description/Justification: Modify time delay in Electronic Assembly (EA) as companion to GSE ECP-78 to improve effectiveness against small targets and eliminate an electrical interference problem.

Development Status: ECP 0273-9 approved 5 Nov 1980

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	687	-	-	350	\$ 261	450	\$ 365	800	\$1,313

Basis for Cost Estimate: Approved ECP 0273-79. Cost per unit \$745.

Method of Implementation: EAs to be modified at Bendix Corp.. Installed at NWSs.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54 Missile System

Missile Modification Title: Depot T.S. Operational Life Improvements

Description/Justification: Extend the Operational Life Improvements of the Depot Test Stations by replacing dependent parts with potential for failure and replacing components which cannot be supported. Development of modification to occur in FY-83 with Procurement/Production to begin in FY-84.

Development Status:

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	1	2,124	1	2,124

Basis of Cost Estimate:

- (1) Non-Recurring Cost = \$816,000
- (2) Recurring Cost per Test Set = \$1,308,000

Method of Implementation: Installation at Depot by the Contractor.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54/C

Missile Modification Title: Guidance Section Container Shock Mounts CNU-234. (ECP-8023-100)

Description/Justification: Defective/failed shock mounts to be replaced to meet MIL-STD-648.

Development Status: ECP 8023-100 in coordination.

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	202	\$44	-	-	-	-	202	\$44

Basis Of Cost Estimate: Cost per Kit \$220 (FY-82).

Method of Implementation: Accomplish during Normal Rework at Weapons Station.



Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54A/C

Missile Modification Title: AUR Container Saddle Assy CNU-242/E (ECP-E-770094)

Description/Justification: Improve usability of early CNU-242/E AUR Containers by modification of Saddle Assembly

Development Status: ECP-E-770094 approved.

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	200	\$9	-	-	-	-	200	\$9

Basis Of Cost Estimate: Kit Cost per unit \$45.00.

Method of Implementation: NWS will modify saddle assembly during normal maintenance cycle.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX

Missile Modification Title: AIM-54A Target Detector Device Sensitivity/EA (ECP-78)

Description/Justification: Additional capability against small low altitude targets is gained by this modification. In general, the Target Detector will be removed at the Naval Weapons Stations, modified by the Bendix Corp. and re-installed at the Naval Weapons Station. (HAC) companion to ECP 0273-9.

Development Status: Engineering Development

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>uture Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
300	\$191	-	-	-	-	-	-	300	\$191

Basis of Cost Estimate: Approved DCP-78.

Method of Implementation: Removal and re-installation at Naval Weapons Stations.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX-54C

Missile Modification Title: Missile, Inrush Current Limiter (ICL) (ECP-79)

Description/Justification: Deletion of the ICL located on the Electronic Unit in the Guidance Section will provide overall program savings beyond FY-83 production AIM-54C, while retaining ICL in AIM-54C/AWG-9 weapon system.

Development Status:

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	180	\$180	-	-	180	\$180

Basis of Cost Estimate: Bypass Kit cost @ 1,000 per unit.

Method of Implementation: Retrofit by attrition at Depot.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: PHOENIX AIM-54A/C

Missile Modification Title: AUR Container Stacking Post, CNU-242/E (ECP-E-770095)

Description/Justification: Modifications required to prevent damage to PHOENIX Missiles in containers.

Development Status: ECP-E-770095 approved.

Scope of Program: (Dollars In Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	550	\$11	-	-	-	-	550	\$11

Basis of Cost Estimate: Kit cost per unit \$20.00.

Method of Implementation: Installation at the Naval Weapons Stations.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-TBD (AWC-TBD) 642AS1250 Guidance Section Modification

Description/Justification: This ECP upgrades the MGU to the Block 1C configuration for improved missile performance and survivability

Development Status: In development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	373	\$2,364.8	373	\$2,364.8

Basis of Cost Estimate: Kit cost is \$6,340. Assumes mandatory return of guidance sections by the Weapons Stations to the Depot.

Method of Implementation: Installation will be performed at Depot and Intermediate level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-1676C1) (AWC-'85) Canister Drain Re-design

Description/Justification: Present drain is so small that it becomes blocked by paint chips and dirt. In some cases the present drain has allowed salt water intrusion into the canister.

Development Status: ECP complete and approved.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	35	\$7.1	-	-	-	-	35	\$7.1

Basis of Cost Estimate: Kit cost is \$203.

Method of Implementation: Installation will be performed at the Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-TBD) (AWC-TBD) Block 1C MOD

Description/Justification: The Block 1C Program modifies the missile guidance unit and the command launch system to allow pre-launch selection of terminal trajectory to provide additional enhancement to HARPOON survivability and effectiveness.

Development Status: Individually the various terminal trajectories have been validated.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	382	\$3,595.3	126	\$793.6	508	\$4,393.9

Basis of Cost Estimate: Kit cost is \$6,333 per missile. Other costs in FY-83 include 20MGUs (\$58.8K x 20 = \$1176K) for rotatable pool to support MOD program. Assumes that 11 MGUs from CP-1950/AWC-219 'Block 1B' MOD will be upgraded and also utilized as part of the rotatable pool for a total rotatable pool of 31 MGUs.

Method of Implementation: Installation will be performed at Intermediate and Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-TBD) (AWC-TED) Sustainer Extended Range Modification.

Description/Justification: Incorporates a modified fuel (J5-10) which is compatible with the extended range modification for the sustainer turbojet engine.

Development Status: In development

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	146	\$8.0	816	\$44.9	962	\$52.9

Basis of Cost Estimate: Kit cost is \$55. Will be performed concurrently with the Turbojet Extended Range modification.

Method of Implementation: Installation will be performed at Depot level.



Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-955R1) (AWC-139) Increased Connector Mounting Spring Force

Description/Justification: Present springs in missile section wiring harness connectors have insufficient tension to insure complete mating; therefore, mating connectors have come apart due to vibration in transportation and captive carry.

Development Status: ECP approved and implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	75	\$4.8	-	-	75	\$4.8

Basis of Cost Estimate: Kit cost is \$64.

Method of Implementation: Installation will be performed at Depot and Intermediate level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-14/1R2/1812R2)(AWC-152) Seeker Improvements to Guidance Sections, Common USN/UK Seeker

Description/Justification: Provides USN with the increased capabilities of the UK seeker plus modifications to improve performance in an ECM environment.

Development Status: ECP complete and approved. First kit deliveries expected in FY 1982.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	69	\$338.1	155	\$927.2	250	\$1,417.0	519	\$2,682.3

Basis of Cost Estimate: Kit cost is \$5,982.

Method of Implementation: Installation will be performed at the Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-TBD) (AWC-TBD) Turbojet Engine Combuster Extended Range Modification

Description/Justification: Incorporates a change to the turbojet engine combustor which provides enhanced range for the HARPOON missile.

Development Status: In development.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	-	-	-	-	944	\$994.4	1002	\$1,058.2

Basis of Cost Estimate: Kit cost is \$1,100. Modification will be performed concurrently with the Sustainer Extended Range modification.

Method of Implementation: Installation will be performed at Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-TED) (AWC-TBD) Crush Probe Sensors

Description/Justification: Make warhead resistant to terminal defense systems.

Development Status: In development at NAVWPNCEN and scheduled for incorporation in FY-82 missile production.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	505	\$2,229.1	596	\$2,630.7	480	\$2,268.5	1581	\$7,128.3

Basis of Cost Estimate: Kit cost is \$4,414 per missile.

Method of Implementation: Installation will be performed at Intermediate and Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-7039R3) (AWC-228) MK-44 MOD 1 Fuze Booster (Warhead)

Description/Justification: Present MK-44 MOD 0 Fuze Booster does not meet safety criteria for CV fire situation. MOD 1 meets these requirements.

Development Status: ECP approved and implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	381	\$96.0	460	\$126.5	-	-	841	\$222.5

Basis of Cost Estimate: Kit cost is \$252 per missile. Assumes that in FY-83 installation of MK-44 MOD 1 will be installed concurrently with crush probe sensors modification of warhead.

Method of Implementation: Installation will be performed at Intermediate and Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-434R2) (LWC-209) Eliminate Tartar Booster wiring in ASROC & CAP/CAN Booster

Description/Justification: The TARTAR firing circuit wiring in the ASROC & CAP/CAN Launchers is considered a safety hazard.

Development Status: ECP approved and implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	52	\$32.5	-	-	-	-	52	\$32.5

Basis of Cost Estimate: Kit cost is \$625.

Method of Implementation: Installation will be performed at Intermediate level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-1628R1C1) (AWC-234) Replace Capsule Fin Blades

Description/Justification: Change USN Capsule Fin from Casting to Machining and Improve AFT Body Corrosion Resistance.

Development Status: ECP approved and being implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	48	\$505.5	60	\$631.9	14	\$147.4	122	\$1284.8

Basis of Cost Estimate: K&T cost is \$10,532 per missile.

Method of Implementation: Installation will be performed at Depot and Intermediate level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-2082) (AWC-233) Add third guide lug to USN capsule

Description/Justification: Addition of third guide lug prevents capsule misalignment and rifling during removal from torpedo tube.

Development Status: ECP approved and being implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	92	\$93.1	34	\$26.5	-	-	126	\$119.6

Basis of Cost Estimate: Kit cost is \$780 per missile. Other costs in FY-82 include three tool kits/jigs required to install the modification.

Method of Implementation: Installation will be performed at Intermediate level.



Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-24R1) (AWC-231) Turbojet Engine Leakage Correction

Description/Justification: Missiles returning from the fleet are experiencing turbojet engine leakage, in some cases rendering the missile unserviceable.

Development Status: ECP approved and implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY 1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	544	\$137.7	163	\$43.9	326	\$87.9	1033	\$269.5

Basis of Cost Estimate: Kit cost is \$270 per missile.

Method of Implementation: Installation will be performed at Depot level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-1824) (ANC-TBD) Canister Enclosure Installation Improvements

Description/Justification: Modification of canister protective covers and attached hardware to allow shipboard use of them as protective camouflage covers on canisters after missile firing. Color changes from red to gray as well.

Development Status: In Development.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
-	-	123	\$17.2	296	\$11.4	110	\$15.4	529	\$74.0

Basis of Cost Estimate: Kit cost is \$140 per missile.

Method of Implementation: Installation will be performed at Intermediate level.

Missile Modifications

Appropriation: Weapons Procurement, Navy

Missile Type: HARPOON A/R/UGM-84

Missile Modification Title: (ECP-1990R1C1) (AWC-219 (3 parts )) Block 1B MOD

Description/Justification: The Block 1B program modifies the HARPOON terminal flight trajectory. This minor change to the guidance system will enhance HARPOON performance and survivability in the face of increasing threat capability.

Development Status: RCP approved and being implemented.

Scope of Program: (Dollars in Thousands)

<u>Prior Years</u>		<u>FY-1982</u>		<u>FY-1983</u>		<u>Future Years</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
256	\$1,839.5	119	\$62.8	-	-	-	-	375	\$1,902.3

Basis of Cost Estimate: Kit cost is approximately \$585 per missile in FY 1981. Other costs in FY-81 include an MGU T/S (\$959.2K) and 11 MGUs (11 x \$58,789 = 646.7K) and 30 memory pages (30 x \$2,463 = \$73.9K) as a rotatable pool to support the MOD program. For FY-82 ECP 1990R1C1 will also procure this modification for 7 spare MGUs.

Method of Implementation: Installation will be performed at Depot level.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: STANDARD MR RIM-66B

Missile Modification Title: MK-56 Dual Thrust Rocket Motor Modification

Description/Justification: MK-56 Rocket Motor modification will update early production motors by removing the old propellant, refurbishing the chamber and reloading with the new more reliable and stable sustainer propellant.

Development Status: Complete

Scope of Program:

(\$ in Thousands)

<u>Prior Years</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>Future Program</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
168	\$1,680	156	\$2,600	140	\$2,500	140	\$2,600	135	\$2,700	316	500	1,055	\$20,580

Basis for Cost Estimate. Based on current information.

Method of Implementation: Incorporation will be performed by Aerojet or NOS Indian Head. Production leadtime is eighteen months. The regrain production schedule is modified to consolidate all regrain motors in the same production lots with separate handling of new motor lots. This reduces logistic concerns of Fleet returned motors. This programming also alleviates any production breaks between new motor contracts. Installation costs are budgeted in the O&M,N Appropriation.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: STANDARD ER-RIM-67A

Missile Modification Title: MK-12 Booster Modifications

Description/Justification: As part of the STANDARD SM-1 Reliability Improvement Program, STANDARD (ER) MK-12 booster performance suffers from resonant burning and rough separation. NOS, Indian Head and NWC, China Lake are conducting a joint development program which has identified three booster modifications which will solve the reliability problems. The modifications will result in: (a) an improved propellant formulation, (b) a modified nozzle and (c) modified booster resonant rods.

Development of Status: Completed

Scope of Program:

(\$ in Thousands)

<u>Prior Years</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>Future Program</u>		<u>Total P</u>
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>
63	\$1,378	58	\$1,658	74	\$1,800	72	\$1,712	70	\$2,130	173	\$6,562	512

Basis for Cost Estimate: Material based on present procurement information and cost estimates for modified chemicals and hardware.

Method of Implementation: Incorporation will be part of the MK-12 booster regaining program at NOS, Indian Head. Product leadtime will be eighteen months.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: STANDARD ER-RIM-67A

Missile Modification Title: FCP 1967-1 (Improve Performance)

Description/Justification: This modification replaces the existing Autopilot Roll Free Gyro and Pickoff Drive Circuit Board to improve performance.

Development Status: Completed.

Scope of Program:

(\$ in Thousands)

<u>Prior Years</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>Future Program</u>		<u>Total Program</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
130	\$94	50	\$42	0	0	0	0	0	0	0	0	180	\$136

Basis for Cost Estimate: Based on current procurement information.

Method of Implementation: Incorporation of the ORDALT will be performed at the Depot Level Maintenance Facility (DLMF). ORDALT will be manufactured by General Dynamics, Pomona with a leadtime of 18 months. Installation costs are budgeted in the O&M,N Appropriation.

Missile Modification

Appropriation: Weapons Procurement, Navy

Missile Type: STANDARD ER-RIM-67A

Missile Modification Title: MK-7 Sustainers to MK-30s

Description/Justification: The modification of MK-7 to MK-30 consists of removal of old propellant, refurbishment and modification of metal parts as necessary, and manufacture of new propellant grain and loading. The modification will increase reliability, service life and performance of the sustainer and missile.

Development Status: Completed

Scope of Program:

(\$ in Thousands)

<u>Prior Years</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>		<u>FY 1984</u>		<u>Future Program</u>		<u>Total Prog</u>	
<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>	<u>Qty</u>	<u>Amt</u>
0	0	0	0	70	\$1,200	70	\$1,288	70	\$1,470	119	\$2,618	329	\$6,

Basis for Cost Estimate: Based on current modification operations. Material based on present procurement information and cost estimates for modified chemicals and hardware.

Method of Implementation. Incorporation will be part of the MK-30 program at Atlantic Research. Production leadtime will be 12 months.